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A REVISION OF THE TRIBE ASPIDIMERINI WEISE (COLEOPTERA—COCCINELLIDAE)

By A. P. Kapur, M.Sc., F.R.E.S.
(Imperial Institute of Entomology)

(Manuscript received 21st April, 1947)
(Read 4th June, 1947)

Introduction.

The tribe Aspidimerini Weise consists of certain predacious Coccinellidae which are confined mainly to the Oriental Region. Owing to their usually small size, variable coloration and superficial resemblance to certain other tribes, they have often been misidentified, with the result that it is very difficult to assess from literature the exact role played by them in the control of insect pests. *Telsimia nitida* Chapin, a member of the tribe Telsimiini, was erroneously (*vide* Swezey, 1940) called *Cryptogonus orbiculus* var. *nigripennis* Weise (a member of this tribe) for a long time even after it had been reported to exercise complete control of *Aspidiotus destructor* Signoret in Guam (Vandenberg, 1929) and was introduced into Hawaii for the control of *Pinnaspis buxi* Sch. (Pemberton, 1938, 1939). Another doubtful record to which attention may be drawn here is that of the introduction of *Cryptogonus orbiculus* (Gyllenhal) from the Philippines into California in 1910 (Essig, 1911), concerning which Smith (1914) remarks that the species actually introduced was perhaps *Scymnus bipunctatus* Klug. Entomologists interested in the biological control of insect pests have often imported from the Oriental Region suitable natural enemies, including Coccinellids. A revision of a tribe confined to this region is therefore of interest not only to systematists but also to economic entomologists.

The material on which the present study is based is very extensive and covers a wider range of species than that which has been available to any previous worker on the group. Besides the types present in the British Museum, Crotch's types at Cambridge and some of Mulsant's types at Cambridge and Oxford (Hope Collection) have been examined, and almost all the known species and nearly as many new ones are dealt with in this paper. The figures were mostly drawn with the aid of a camera lucida. Those of the entire beetles or of an elytron, although crude and not showing the pubescence and punctation, were drawn mainly with a view to giving the colour-pattern.

II. Distinguishing Characters and Geographical Distribution of the Tribe.

Mulsant (1850) first separated *Aspidimerus spencii* Mulsant and *Cryptogonus orbiculus* (Gyllenhal), the two species of the tribe then known to him, as a branch, "Aspidimeraires," of his fifth family—the "Scymniens". Weise, who had by 1900 seen a larger number of species,

separated them from Scymnini and gave them the present tribal name and status.

The tribe Aspidimerini may be briefly defined as follows :—

Small pubescent Coccinellids with finely facetted and entire (not emarginate) eyes (fig. 1A) which do not extend to the undersurface of the head and are margined by the narrow lateral extensions of the clypeus and the forwardly produced genae ; antennae (fig. 1B) small and exposed at the base, geniculate, nine-segmented, first segment large, broadly quadrate or ovate, second a little smaller and subtriangular, the last seven segments together forming a spindle or club-shaped flagellum which is slightly longer than the width of the first segment ; head foveolate for the reception of the various appendages such as antennae, maxillary palpi, etc. ; abdomen (fig. 1C) with six visible sternites, the first being dilated opsteriorly in an arc in the middle ; legs (fig. 1D) with the trochanter elongate, femora broadly expanded and completely concealing the compressed tibiae, tarsi three-segmented, the usually small, third, penultimate segment absent, claws pointed, each with a subquadrate basal tooth.

FIG. 1.—The characters of the tribe Aspidimerini : A—part of the front of the head ; B—antenna of *Cryptogonus orbiculus* (Gyll.) ; C—abdominal sternites of ♂ *Pseudaspidimerus circumflexa* (Mots.) ; D—leg of *P. circumflexa.*

The tribe is easily separated from Scymnini, in which (i) the eyes extend to the underside of the head, (ii) the antennae, usually ten-segmented, are not geniculate with the first two segments disproportionately enlarged as in Aspidimerini, (iii) the first abdominal sternite is not dilated posteriorly in an arc, and (iv) the tarsi, though apparently three-segmented, nevertheless possess a small additional segment. Some members of the Telsimiini and the Platynaspini have sometimes been mistaken for those of Aspidimerini. These may be distinguished from the latter by the broadly dilated hood-like clypeus concealing the

antennae and bisecting the eyes; by the eyes extending to the underside of the head and by the antennae which, though short, are not geniculate as in Aspidimerini. There are five visible abdominal sternites in Telsimiini as against six in Platynaspini and Aspidimerini. The femora, though partly expanded in Telsimiini and Platynaspini, do not completely conceal the tibiae.

Korschefsky (1931) included in this tribe two monotypic genera, *Cyrema* Blackburn and *Hypocyrema* Blackburn, from Australia. On examining their genotypes (in the British Museum (Natural History)) it has been observed that they do not belong to Aspidimerini, but to the Scymnini and Telsimiini respectively. The tribe Aspidimerini does not therefore extend to Australia, but is confined to Ceylon, India, Burma, China, Japan, Siam, Malaya, Sumatra, Java, Borneo and the Philippine Islands.

III. Notes on the Genera.

At the time of erecting *Aspidimerus* and *Cryptogonus*, Mulsant (1850) had before him only one species of each, and he separated these two genera by the structure of the prosternum and by whether or not the labrum was covered by the clypeus; Chapuis (1876) and Weise (1885) considered these characters unreliable and the separation unwarranted as more species became known, and they therefore synonymised the two genera. While Chapuis retained the name *Cryptogonus*, Gemminger and Harold (1876) and Weise (1885) preferred to retain *Aspidimerus*. As none of them had examined the genotype of the latter, the position remained unsatisfactory. In 1900, Weise, after studying a larger collection, felt convinced, despite his earlier conclusion, of the existence of two genera in the tribe on the basis of the structure of the male genitalia and consequently revived the genus *Cryptogonus*. However, as he was not sure whether the species he had been grouping under *Aspidimerus*, according to his conception of the genus, were really congeneric with the genotype, *Aspidimerus spencii* Mulsant, he pointed out that should the latter prove distinct from *Aspidimerus circumflexa* (Motschoulsky), a new generic name should be proposed for it and allied species. An examination of the type of *Aspidimerus spencii* Mulsant in the Hope collection at the University Museum, Oxford, shows that Weise had indeed a different conception of the genus from that of Mulsant and that *A. circumflexa* is not congeneric with *A. spencii*. Accordingly, a new generic name *Pseudaspidimerus* is now proposed to include *circumflexa* and the allied species. The present study shows that while the position of the labrum, whether or not it is covered by the clypeus, is not a reliable character, the structure of the prosternum and the shape of its carinae are suitable external characters for the separation of the genera and are supported, to a large extent, by the structure of the male and female genitalia. It may be mentioned here that throughout the tribe the prosternum is a transverse segment which is obtriangular, usually flat, and sometimes convex in the middle and foveolate for the most part laterally. The foveolate portion is

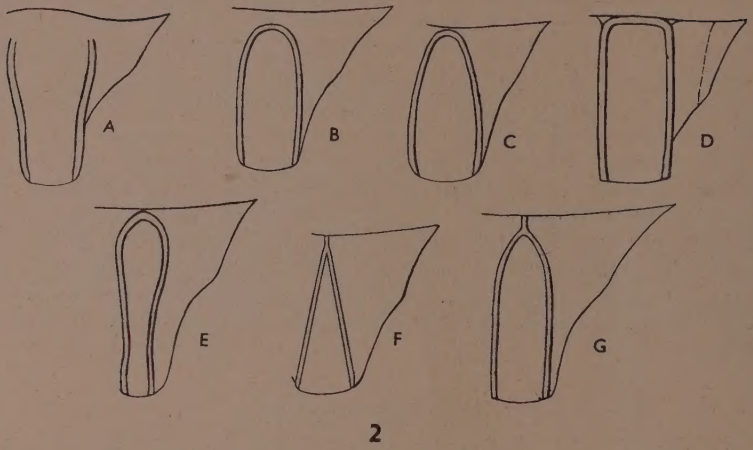

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Fig. 2.—The various shapes of prosternal carinae : A—*Aspidimerus spencii* (Muls.) ; B—*Cryptogonus orbiculus* (Gyll.) ; C—*Cryptogonus fulvoterminatus* Boheman ; D—*Pseudaspidimerus circumflexa* (Mots.) ; E—*Cryptogonus complexus* sp. n. ; F—*Cryptogonus deltoides* sp. n. ; G—*Cryptogonus bilineatus* sp. n.

covered by the expanded femora, while the visible part of the prosternum is the obtriangular median part which has usually a pair of carinae. Mulsant obviously referred to the carinae and the area enclosed by them, as the prosternum. Thus, in distinguishing *Aspidimerus* from *Cryptogonus* he described it as widening from behind to the front in the form of a chin-band in the former and being subparallel in the latter. Examination of the type species of each shows that he could not have described the distinctly obtriangular median part of the prosternum in *Cryptogonus* as subparallel. However, it is not considered desirable to conform to Mulsant's above conception of the prosternum in the tribe, mainly because it is misleading. Hence, for the purpose of brevity in the descriptions and in the following key, the term prosternum is restricted to its visible, median, obtriangular part which is usually not covered by the expanded trochanter and femora of the first pair of legs.

In order to facilitate the use of the key, external characters only have been employed, in spite of the fact that the genitalia also furnish useful supplementary characters.

Key to the genera.

1. Prosternal carinae absent, prosternum flat ; body small, rounded-oval, convex ; anterior and posterior angles and lateral margins of pronotum rounded. (Distribution : Philippine Islands)
Acarinus gen. n.

Prosternal carinae present, prosternum dat or convex . . . 2

2. Prosternum evenly convex; carinae (fig. 2A) widely apart, divergent and not meeting each other anteriorly; the area between them convex and widening anteriorly to form a chin-band; coarse punctation and long pubescence uniform all over the prosternum; body moderately large (4–6 mm. long), oblong-oval, moderately convex; pronotum with the posterior angles pointed and lateral margin straight. (Distribution: Assam, Burma) . . . . . *Aspidimerus* Mulsant

Prosternum flat at least on the sides external to the carinae, which always meet and enclose a flat area which is either at the same level or slightly projecting ventrally, and not forming a chin-band; body small to moderately large (2–4·5 mm. long), elongate-oval to subrounded 3

3. Carinae (fig. 2D) as wide apart as the base of prosternal process, parallel, extending from the base to the anterior margin of the segment and meeting each other in a transverse ridge to enclose a rectangular area which, when viewed from the underside, lies at a higher level than the lateral parts of prosternum; prosternum subquadrate in outline; body 2–2·75 mm. long, rounded-oval, usually moderately convex; pronotum with the posterior angles subrounded. (Distribution: Ceylon, India, Burma, Siam, Java) . . . . . **Pseudaspidimerus** gen. n.

Carinae (figs. 2B, C, E–G) not as above, varying in outline, the area enclosed by them lying at the same level as the rest of prosternum, which is flat, the part external to the carinae triangular in outline. (Widely distributed) . . *Cryptogonus* Mulsant

Aspidimerus Mulsant (1850).

Aspidimerus Mulsant, 1850 : 944. Crotch, 1874 : 202. Weise, 1885 : 232; 1900 : 426. Mader, 1926 : 16. Korschefsky, 1931 : 172.

Body moderately large, 4 to 6 mm. long, distinctly larger in females than males, oblong-oval, moderately convex, finely punctate and with short, sparse pubescence. Head transverse oval, eyes large, finely facetted, entire, slightly convergent, narrowly margined and not extending to the underside of the head. Clypeus completely covering the labrum, widely and obliquely emarginate round the base of the antennae, anterior margin impunctate, glabrous, slightly emarginate in the middle and rounded laterally. Antennae as described for the tribe, the first segment being subquadrate and slightly rounded on the inner side and the last slightly smaller than the preceding segment and subconical; mandibles bifid at the apex, maxillae compact, with the cardo and stipes strongly chitinised and enlarged; mentum subcordiform, truncate anteriorly with the margin devoid of a median notch or emargination, coarsely punctate and almost completely covering the small and weakly chitinised labium. Pronotum transverse, nearly twice as wide as long; posterior margin as wide as the base of elytra, lateral margins narrow, straight and with the posterior angles pointed; anterior margin slightly narrower than the base, weakly emarginate, and curved closely round the lateral parts of the head. Scutellum triangular with the basal angles rounded and the apex well pointed. Elytra oblong-oval, moderately convex, with fairly marked humeral callus, and obtuse humeral angles; the lateral margins rather subparallel in the middle, slightly emarginate behind the middle and obtusely rounded towards the apex. Prosternum evenly convex, carinae as wide apart as the width of the base of the prosternal process, divergent anteriorly, not meeting each other but usually becoming indistinct before the anterior margin, the part between the carinae convex widening anteriorly and forming a chin-band; the entire surface of prosternum with uniformly coarse

punctation and long, suberect pubescence. Mesosternum transverse, widely emarginate anteriorly, finely punctate and very sparsely pubescent. Elytral epipleurae narrow, slightly more so posteriorly, shallowly channelled along their length except at the ends which are deeply foveolate for the reception of the tibio-femoral joints of the second and third pairs of legs.

Of the abdominal sternites, the first longest and dilated posteriorly (as in other members of the tribe), second to fourth short and subequal, fifth slightly longer than fourth, sixth usually equal to fourth in males and shorter in females ; in neither sex is the sixth sternite emarginate posteriorly. Females (fig. 3C) with the ninth sternites subtriangular with their apices towards the median line, distinctly narrow and rounded. Spermatheca chitinised and with a wide nodulus, a narrower cornu and a short ramus. Male genitalia (fig. 3D, E) with sipho very narrowly tubular excepting the capsule which is slightly wider and varies in shape from species to species ; penis nearly twice as long as wide in the middle, slightly narrower towards the apex, paramera filiform or spathulate, nearly as long as penis and provided with irregularly and sparsely dispersed short setae towards the apex.

Genotype : *Aspidimerus spencii* Mulsant ; in the Hope Collection, Oxford.

Geographical distribution : Burma ; Assam ; India.

Remarks : The genus is more closely related to *Cryptogonus* Mulsant than to the other two genera of the tribe. *Cryptogonus* is a large genus which can be further divided into various groups : of these the *orbiculus* group comes closer to *Aspidimerus*. The two may, however, be easily distinguished by the structure of the prosternum, genitalia, etc.

Key to the species of Aspidimerus.

1. Elytra black, each with a discal, large, irregularly rounded or quadrate, yellowish to reddish brown spot. (Loc. Burma, fig. 4A) . . . . . *birmanicus* (Gorham)

Elytra yellowish brown to reddish brown, with black markings . 2

2. Pronotum brown except the slightly piceous and ill-defined area near base ; elytra without the black external border, suture with a narrow, black border between the scutellum and the middle ; each elytron with three black spots, the first on the callus and extending towards the base, the second large, transverse and slightly notched anteriorly and situated slightly posterior to the transverse middle line of elytron, the third small, oval or obtriangular, situated before the apex. (Loc. Khasi Hills, Assam, India ; Burma ; fig. 8A) . . . . . *spencii* Mulsant

Pronotum black excepting the anterior angles ; elytra with a narrow black border all round the margins, that of the suture irregularly expanded in the basal half ; each elytron with three black spots, the first on the callus but extending away from the base, the second and third situated on the same level and slightly posterior to the transverse middle line, while of these two, the one towards the external border is smaller and confluent with it. (Loc. Burma, figs. 3A, B) . . . . . *ruficrus* Gorham

Aspidimerus spencii Mulsant. (fig. 8A).

Aspidimerus spencii Mulsant, 1850 : 944. Weise, 1885 : 232. Korschefsky, 1931 : 173.

Oblong-oval, moderately convex. Head, antennae, and mouth-parts brown, except the black eyes ; pronotum brown except the indistinctly marked, fuscous area along the base. Scutellum dark-brown. Each elytron with a narrow, black sutural border extending from a little below the apex of the scutellum to the middle of the suture ; in addition there are three black spots disposed as follows : the first short, subquadrate, situated on the humeral callus and extending towards the base and the humeral angle ; the second large, transverse, nearly twice as broad as long, slightly notched anteriorly, situated nearer the external border than the suture and occupying two-fifths to three-fifths of the length of elytron ; the third smaller, oval but slightly dilated posteriorly and appearing obtriangular and situated at equal distance from the sutural and apical margins between five-sevenths and six-sevenths of the length of elytron. Underside and legs reddish-brown.

Head (female) with fairly close and rather coarse punctation and long, thin, sparse, yellowish pubescence. Pronotum and elytra with finer punctation and with pubescence as on the head. Punctation on scutellum sparse and very fine. Underside coarsely punctate except the mesosternum and the expanded femora of the last two pairs of legs which are rather finely punctate ; pubescence thin, long, rather suberect and yellowish on the thoracic segments and denser, moderately long, subdepressed and yellowish on the legs, elytral epipleurae and abdominal sternites. Genitalia not known.

Length : (♀) 5·9 mm. : *width* : 4·5 mm.

Type : Female, in the Hope Collection at the University Museum, Oxford.

Geographical distribution : INDIA : Khasi Hills, Assam (type locality) ; BURMA : (Weise 1885 : 232); Mungphu (*Atkinson*).

Aspidimerus ruficrus Gorham (fig. 3).

Aspidimerus ruficrus Gorham, 1895 : 690. Korschefsky, 1931 : 173.

Oblong-oval, moderately convex. Front of the head sulphur-yellow in male and light brown in female, eyes grey or black, anterior margin of clypeus, antennae and mouth-parts dark brown in both sexes. Pronotum black except the lateral margins, each of which has an elongate, triangular spot which is sulphur-yellow in male and reddish-brown in female. Scutellum black. The ground colour of elytra likewise sulphur-yellow in male and reddish brown in female. Each elytron with a black border along all the margins ; along the basal and external margins the border is narrow, while that along the sutural margin is expanded irregularly in the basal half and much narrower towards the apex. In addition there are three black spots on each elytron disposed as follows : the first subrounded, situated on the humeral callus, away from the base, and, when enlarged, extending towards the apex but not towards the base ; the second and third situated on the same level and slightly posterior to the transverse middle line, while of these two, the one situated towards the external border is small and confluent with the border, the other, nearer the suture, being larger, subquadrate or subrounded and slightly nearer the suture than the lateral margin (fig. 3A, B). Underside piceous black to reddish brown.

Head with fairly close and rather coarse punctation in female and with finer punctation in male ; pubescence thin, moderately long, sparse and yellowish. Pronotum and elytra with fairly close and fine punctation and with the pubescence as on the head. Scutellum with a few minute punctures and hairs. Underside coarsely punctate except the mesosternum and the femora of the last two pairs of legs which have finer punctures ; pubescence sparse, moderately long and yellowish. Female with a moderately broad tenth tergite (fig. 3C, *Xt*) and a pair of subtriangular ninth sternites, each provided with a small stylus bearing a few

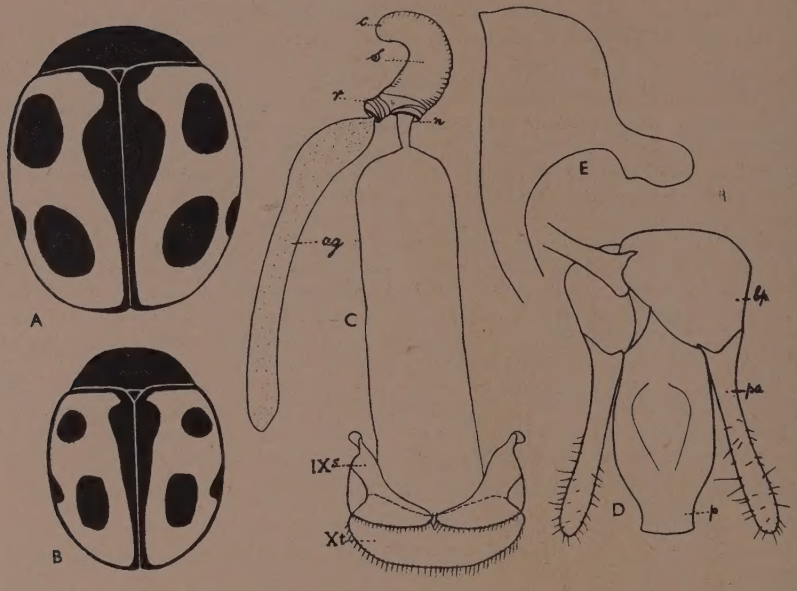

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FIG. 3.—*Aspidimerus ruficrus* Gorh. : A and B—outline of the body ; C—female genitalia : *s*, spermatheca ; *c*, cornu ; *r*, ramus ; *n*, nodulus ; *ag*, accessory gland ; *IX s*, ninth sternite ; *Xt*, tenth tergite ; D—male genitalia : *bp*, basal plate ; *pa*, paramera ; *p*, penis ; E—siphonal capsule.

long setae ; spermatheca consisting of a wide nodulus (*n*), a narrow cornu (*c*) and short ramus (*r*), and having a long accessory gland (*ag*). Male genitalia (fig. 3D, E) with the tubular sipho curved almost in a circle, with the siphonal capsule (E) partly expanded excepting the narrower inner branch ; penis oblong, fairly broad from the base toward the apex for two-thirds its length, after which it narrows and forms a truncate apex ; paramera as long as penis, slightly narrow in the middle, with the apical half bearing a number of short sparsely arranged setae.

Length : 4·0 mm. (♂)—4·8 mm. (♀) ; *width* : 3·0 mm. (♂)—3·5 mm. (♀).

Geographical distribution : BURMA (type locality) ; the examples before me are from Ruby Mines (*Doherty*).

Remarks : This species is very closely related to *A. spencii* Mulsant from which it may be easily separated by its colour-pattern.

Aspidimerus birmanicus (Gorham) (fig. 4).

Cryptogonus birmanicus Gorham, 1895 : 691.

Oblong-oval, moderately convex. Head sulphur-yellow in male and reddish brown in female, eyes black, antennae, clypeus and mouth-parts dark to reddish brown in both sexes. Pronotum black except the antero-lateral angles which are yellowish in male and reddish brown in female. Scutellum and elytra (fig. 4A) black, the latter each with a large, irregularly rounded or subquadrate, yellowish (in ♂) or reddish brown (in ♀), discal spot,

nearly half as wide as elytron, situated slightly nearer the base than the apex of elytron. Underside with the thoracic sternites black to dark brown and the elytral epipleurae, legs and abdominal sternites reddish brown.

Head closely and rather coarsely punctate in female and finely punctate in male ; pubescence sparse, long, greyish to yellowish on the head, as also on the rest of the upper surface of the body. Pronotum and elytra finely and closely punctate ; scutellum with a few minute punctures. Underside coarsely punctate except the mesosternum, elytral epipleura and femora of the second and third pair of legs which are less coarsely punctate ; pubescence sparse, long, suberect, yellowish or greyish on the thoracic sternites and shorter and subdepressed on the abdominal sternites, elytral epipleurae and legs. Male genitalia (fig. 4B, C) with the narrow and tubular sipho curved almost in a circle and with the siphonal capsule not expanded even in part ; penis slightly expanded in the middle and narrower towards the apex which is truncate ; paramera moderately broad and slightly longer than penis and provided with a number of short to moderately long setae on the apical one-third.

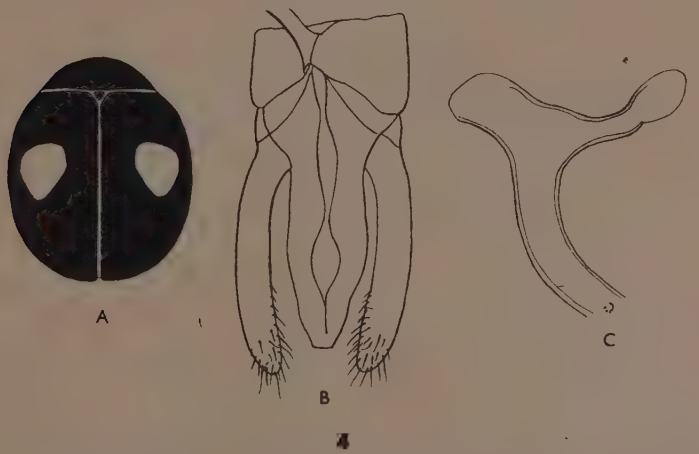

FIG. 4.—*Aspidimerus birmanicus* (Gorh.) : A—outline of the body ; B—parts of male genitalia ; C—siphonal capsule.

Length (♂) : 3·8 mm.—(♀): 5·0 mm. ; *width* (♂) : 2·8. mm.—(♀) : 3·8 mm.

Geographical distribution : BURMA (type locality) ; the examples before me are from Mongphu (*Atkinson*), Maymyo (*H. L. Andrewes*).

Remarks : This species, which has not been catalogued by Korschefsky (1931), is not to be confused with *Cryptogonus fulvoterminatus* var. *birmanicus* Gorham (1895 : 693) which was originally described as a species of *Scymnus* and was considered as a variety of *fulvoterminatus* by Sicard (1912).

Aspidimerus (*Cryptogonus*) *birmanicus* (Gorham) (1895 : 691), as originally described, is distinct from *C. fulvoterminatus* var. *birmanicus*.

Cryptogonus Mulsant (1850).

Cryptogonus Mulsant, 1850 : 944. Crotch, 1874 : 203. Chapuis, 1876 : 238. Weise, 1885 : 232 ; 1900 : 426. Mader, 1926 : 16. Korschefsky, 1931 : 173.

Body small to medium-sized, elongate-oval to subrounded, moderately convex to rather subhemispherical, punctate and pubescent on both the dorsal and ventral surfaces. Clypeus partially or wholly covering the labrum. Antennae and mouth-parts, excepting the mentum, as described for *Aspidimerus*. Mentum large, subcordiform, finely to moderately coarsely punctate and sparsely pubescent, anterior margin either transverse with a small subquadrate or semicircular notch in the middle or with a wide, triangular emargination. Pronotum with the lateral margins straight and with the posterior angles either acute or subrounded. Elytra oblong-oval to subrounded according to the form of the body but usually not emarginate at a little posterior to the middle of the lateral margin. Prosternum obtriangular, flat, with a pair of carinae which are subparallel in the basal half and either subparallel, wider or narrower in the apical half and always meet each other in an arch a little before or at the anterior margin. In the present study the genus has been divided into various groups on the above characters of the prosternum. Abdominal sternites varying in length and form in different groups, the last or sixth sternite in the males being emarginate or entire in different species in the same group. Male genitalia with the sipho very narrow, tubular and not expanded proximally into a bulbous structure; paramera usually filiform, sometimes spathulate, either short or longer than the penis which is usually two to three times as long as wide. Females with the spermatheca usually semicircular, broader in the middle than at either end which may be rounded or narrowly conical.

Genotype : *Coccinella orbicula* Gyllenhal (1808).

Geographical distribution : Ceylon, India, China, Japan, Burma, Siam, Malaya, Sumatra, Java, Borneo and Philippine Islands.

The genus *Cryptogonus* may be divided into various groups as follows :—

1. Body elongate-oval, dorsal surface distinctly shining, very coarsely punctate and with short, sparse and rather suberect pubescence. (Assam) . . . . . *nitidus* group

   Body oblong-oval to subrounded, dorsal surface not shining, less coarsely to finely punctate with the pubescence not suberect . 2

2. Carinae (fig. 2B) shorter than the length of prosternum, nearly two-thirds as long, subparallel, slightly narrowing anteriorly to meet each other in a rounded arch away from the anterior margin ; the enclosed area very finely and sparsely punctate. (Widely distributed) . . . . . *orbiculus* group

   Carinae as long as the prosternum, always reaching its anterior margin 3

3. Carinae meeting each other at the anterior margin, the enclosed area as coarsely punctate as the other part of prosternum, posterior angles of pronotum sharp 4

   Carinae meeting each other a little before the anterior margin and proceeding forward as a single carina which joins the anterior margin ; the area enclosed by them more finely and sparsely punctate than the rest of the prosternum 5

4. Carinae (fig. 2C) nearly as wide apart at the base as the width of prosternal process, subparallel in the basal half and narrow in the apical half. (Java, Malaya, Burma, Assam) *fulvoterminatus* group

Carinae (fig. 2E) much narrower than the base of prosternal process, subparallel in the basal half and widening in the anterior half before meeting each other in an arch at the apical margin of prosternum (Assam, Burma) . . *complexus* group

5. Carinae (fig. 2F) forming a triangle. (Malaya, Sumatra, Borneo, Philippine Islands) . . . . . *deltoides* group

Carinae (fig. 2G) running subparallel for two-thirds their length and acutely arched for the remaining one-third. (South India, Ceylon) . . . . . *bilineatus* group

Key to the species and varieties of the orbiculus *group.*

1. Elytra black with or without brownish borders, markings or spots . 2

Elytra brownish, with or without black border, markings or spots 12

2. Elytra entirely black 8

Elytra black with brownish borders, markings or spots . . 3

3. Elytra black, with only oblong-oval to rounded spots ; apex and lateral borders black 4

Elytra black, with or without oblong-oval to rounded spots, but always with brownish apex or lateral border or both . . 10

4. Elytron black with two brownish or yellowish testaceous spots situated one behind the other in the anterior and posterior halves the spots distinct or confluent with each other ; pronotum black with the testaceous (♂) or reddish brown (♀) triangular spot near the anterior angles pointing anteriorly ; head yellowish in males and reddish brown in females ; siphonal capsule with the external branch much dilated and slightly longer than wide 5

Elytron black with one discal, brownish or yellowish testaceous spot ; pronotum black with the testaceous (♂) or reddish brown (♀) triangular spot near the anterior angles pointing towards the base ; head yellowish in males, black in females, siphonal capsule with the external branch not much dilated and about three times as long as wide 6

5. Elytron black with the two yellowish testaceous to reddish brown spots distinct from each other. (Loc. India, Burma) *quadriguttatus* (Weise)

Elytron black with the two yellowish testaceous to reddish brown spots more or less enlarged and confluent with each other ; when they are much enlarged the elytron has a moderately broad, black border all round except along the apical half of the external margin where it is narrow ; there is a semi-circular, large black spot in the middle of the sutural border, forming a rounded spot with its counterpart on the other elytron. (Loc. India) . . . *quadriguttatus* var. **confluens** var. n.

6. Elytral spot (fig. 5A) oblong-oval to subrounded, usually one-third as long as elytron, situated in the middle of its length, slightly more towards the suture than the lateral margin (seldom, if ever, confined to the posterior half of elytron, when very much reduced in size); sipho curved in the middle almost to three-fourths of a circle, siphonal capsule with the outer branch considerably longer than the inner, subrounded branch; penis three to four times as long as broad at the base, gradually narrowing towards the apex and sigmoid in lateral view. (Widely distributed) . . . . . *orbiculus* (Gyllenhal)

Elytral spot usually wider than long, oval, subquadrate, or reniform, situated rarely in the middle, usually posteriorly to the transverse middle line 7

7. Elytral spot reddish-brown, subquadrate, ill-defined, situated in the middle of the length of elytron (fig. 5E); genitalia as in *orbiculus*. (Loc. China ?.) . . *orbiculus* var. *stellaris* (Mulsant)

Elytral spot yellowish-brown, transverse oval, reniform or quadrate (fig. 6A–D), always confined to the posterior half of elytron; body oblong-oval, in the middle narrower than in *orbiculus*; last abdominal sternite not emarginate posteriorly, sipho straight in the middle, bent only proximally, siphonal capsule without a subround and distinct inner branch, penis elongate, subparallel from the base to two-thirds the length and narrowing in the apical one-third to form a rounded apex, not sigmoid in lateral view. (Sikkim, Assam, India: Burma) **postmedialis** sp. n.

8. Body oblong-oval, slightly narrow in the middle, last abdominal sternite not emarginate, genitalia as in *postmedialis* (fig. 6F). *postmedialis* var. **sushila** var. n.

Body shortly oval, broadly rounded in the middle, last abdominal sternite slightly emarginate posteriorly 9

9. Body more convex, the lateral spots on pronotum more narrow posteriorly; male genitalia same as in *orbiculus*, sigmoid in lateral view; tenth tergite in female less than three times as wide as long, and with the lateral margins rounded (fig. 5M). *orbiculus* var. *nigripennis* Weise

Body less convex, the lateral spots on pronotum more narrow anteriorly, male genitalia not sigmoid in lateral view; tenth tergite in female four times as wide as long, and with the lateral margins subparallel. *quadriguttata* var. **nigriscens** var. n.

10. Elytron black with the apical one-third to one-sixth testaceous, without a brown discal spot or brown external border (fig. 5K). *orbiculus* var. **lunatus** var. n.

Elytron black with, besides the testaceous apex, a discal spot or external border, or both, testaceous; male genitalia as in *orbiculus* 11

11. Elytron black, excepting the testaceous apical one-third and a small to large discal spot, usually confluent with the latter; external border partly testaceous to dark brown (fig. 5G–J). *orbiculus* var. *apicalis* Weise

Elytral pattern as above except that the discal spot is absent; the entire external border distinctly testaceous and confluent with the apical one-third (fig. 5L). *orbiculus* var. *fulvocinctus* Mulsant

12. Elytra entirely testaceous, head brown, pronotum brownish with three ill-defined, dark brown areas, one in the middle and one near each lateral margin; scutellum and underside dark brown; shape of body and structure of prosternum and carinae as in *orbiculus* . . . *orbiculus* var. *antica* (Walker)

Elytra testaceous or reddish brown, with black borders, markings or spots 13

13. Black spots on elytra absent, margins with or without black borders 14

Black spots on elytra present, margins with or without black borders 15

14. Elytron testaceous with the margins all round narrowly bordered black, except the sutural which has a dark border wider near the base and narrower towards the apex. (Loc. Burma) *laetus* (Weise)

Elytron reddish testaceous and without black border along the external margin; basal and three-fifths of the sutural margins with dark brown to black borders; the sutural border widens below the apex of scutellum, is concave towards the external margin and rather indistinct towards the apex; the oblong-oval, testaceous, discal spots indistinct but traceable (fig. 5N); male genitalia as in *orbiculus* (fig. 5O). *orbiculus* var. *sellatus* (Weise)

15. Elytron without black borders along the margins; with one large, oblong-oval, discal, black spot, slightly nearer the suture than the lateral margin (fig. 8D). (Loc. India, Burma). **bimaculatus** sp. n.

Elytron usually with, sometimes without, black borders along the margins; with more than one black spot 16

16. Elytron with the black borders along the margin present or absent, with the number of spots varying between two and three . 17

Elytron with the black borders along the margins present (fig. 8B); with four black spots situated as follows: the first, small and rounded, situated on humeral callus; the second small, at one-third the length of elytron, very near or confluent with the lateral border; the third large, nearly square, with the anterior margin inclined towards the sutural border, confluent with the latter between one-third and middle of the suture; the fourth moderately small, rounded and situated in the centre of the posterior half of elytron. (Loc. China) . . *schraiki* Mader

17. Elytra with broad, black borders along the basal and apical margins (fig. 9C); there are two black spots on each elytron: the first subrounded, confluent with the external margin and placed slightly nearer the base than the apex; the second lying in a transverse line with the first, semicircular, sutural, and forming a rounded spot with its counterpart of the other elytron; the black border at the apex is sinuate on the margin towards the base and the yellowish testaceous area on the elytron appears like the letter *X*. (Loc. India, Burma) . *trioblitus* (Gorham)

Elytra without any black border along the margins, elytron with usually three black spots 18

18. Black spot on pronotum transverse oval, situated at the middle of the base and posterior to the centre of pronotum (fig. 9B); elytral spots as follows: humeral spot absent; first spot subrounded, moderately large, situated a little below the humeral callus, a little anterior to the transverse middle line; second semicircular, sutural, forming a complete rounded spot with its counterpart on the other elytron, almost of the same size and at the same level as the first; third much smaller, rounded and situated in the centre of the posterior half of elytron. (Loc. India) . . . . . *ariasi* (Mulsant)

Black spot on pronotum transverse, or rounded, situated in the middle and along the anterior margin (fig. 9A); elytral spots as follows: the first spot small, rounded and situated on the humeral callus; the second larger, sutural, forming a complete rounded spot with its counterpart on the other elytron, situated a little anterior to the transverse middle line; the third of the same size and shape as the sutural spot and situated on the transverse middle line, slightly nearer the suture than the lateral margin. (Loc. Sikkim, India) . . . **hingstoni** sp. n.

Cryptogonus orbiculus (Gyllenhal) (figs. 1, 2, 5, 6).

Coccinella orbicula Gyllenhal, 1808 : 205.
Cryptogonus orbiculus (Gyllenhal), Mulsant, 1850 : 945. Crotch, 1874 : 203. Chapuis, 1876 : 238. Weise, 1885a : 63; 1900 : 424. Sicard, 1892 : 63. Korschefsky, 1931 : 173.
Platynaspis oculata Motschulsky, 1858 : 118. Crotch, 1874 : 199.
Cryptogonus oculata (Motschulsky), Weise, 1900 : 423. Korschefsky, 1931 : 173.
Cryptogonus centroguttatus Boheman, 1859 : 206. Crotch, 1874 : 203. Weise, 1885 : 233.
Cryptogonus orbiculus var. *centroguttatus* Boheman, Weise, 1900 : 425. Korschefsky, 1931 : 173.
Cryptogonus malasiae Crotch, 1874 : 203. Weise, 1908 : 310. Korschefsky, 1931 : 173.
Cryptogonus orbiculus ab. *japonicus* Weise, 1900 : 425. Korschefsky, 1931 : 173.

Body oblong-oval, convex, with the humeral callus less prominent. Front of the head yellowish in the males and black in the females; eyes dark grey to black in both sexes; clypeus, antennae and mouth-parts deep testaceous and piceous in the males and females respectively. Pronotum black except the anterior margin and the antero-lateral angles; the former with a narrow reddish brown border in both the sexes and the latter each with a triangular yellowish testaceous spot in the males, and a rather indistinctly marked patch in the females. The yellowish testaceous spot in the males has the base extending along the anterior half to nearly two-thirds the length of the lateral margin of pronotum and has the sides (which are subequal) a little less than the length of the base. Scutellum black. Elytron black excepting a large orbicular yellowish testaceous to testaceous, discal spot which is variable in size irrespective of the sex of the example. Usually the spot is situated on the transverse middle line, a little nearer the suture than the lateral margin, and is about one-third as long and a little less than half as broad as the elytron. Underside black except the testaceous or brown anterior angles of prothorax, the reddish testaceous external margins of the abdominal sternites and the legs. The latter with the anterior margin of the femora of the first pair usually with a yellowish testaceous border.

Head moderately, coarsely and closely punctate in both the sexes; pubescence rather short, sparse and yellowish or greyish according as the head is yellowish testaceous or black; clypeus not completely covering the labrum, with the anterior margin widely emarginate in the middle and subrounded laterally; antenna with the first segment large,

transversely oval and concealing the second which is a little smaller and subtriangular, the remaining seven segments forming a club-shaped flagellum with the last segment short, rather disc-shaped ; labrum nearly twice as wide as long, and subrounded laterally ; mandibles bifid and with a cuspidate tooth at the base ; mentum cordate with the anterior margin transverse, except for a small, quadrate notch in the middle, and with the ventral surface moderately coarsely punctate. Pronotum with fine and fairly close punctation and with moderately long, less dense to rather sparse, greyish pubescence ; the anterior and posterior angles subrounded and pointed respectively and the lateral margins straight. Scutellum and elytra with the punctation and pubescence similar to that on the pronotum. Underside with the lateral parts of metasternum, the abdominal sternites and the femora of the first pair of legs distinctly coarsely and closely punctate, and the remaining parts

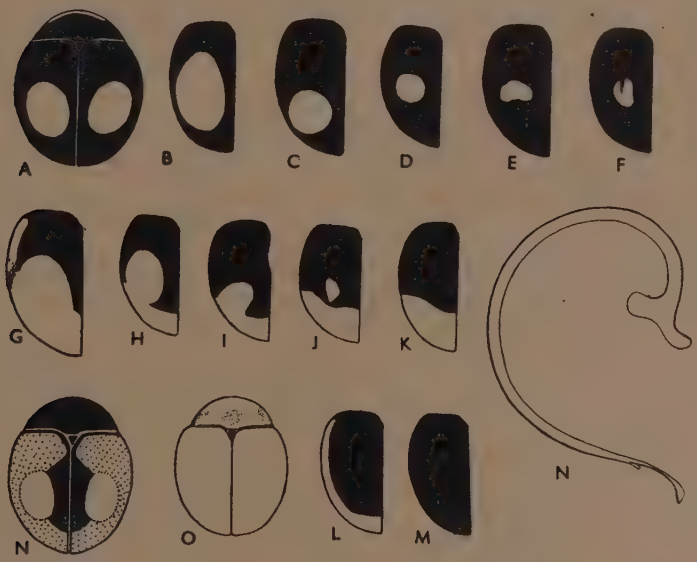

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Fig. 5.—*Cryptogonus orbiculus* (Gyll.) : A–M—showing elytral patterns ; N—sipho of male genitalia.

rather finely punctate ; pubescence short, sparse, subdepressed and greyish to yellowish grey. The prosternal carinae nearly two-thirds the length of prosternum, subparallel, slightly narrowing anteriorly to meet each other in a rounded arch ; the area enclosed by them flat, very finely and sparsely punctate. Mesosternum weakly but widely emarginate anteriorly. Of the abdominal sternites, the first longest in the middle, the second to fourth short and subequal, the fifth and sixth each a little longer than any of the preceding sternites, equal to each other and in the male the sixth with a very small emargination in the middle of the posterior margin. Male genitalia with the sipho narrow, tubular and regularly curved in the middle to almost three-fourths of a circle, the siphonal capsule with the external branch considerably narrower and longer than the inner branch which is subrounded ; the penis three to four times as long as broad at the base, gradually narrowing towards a pointed apex and appearing sigmoid in lateral view. Females with the tenth tergite transverse, a little less than three times as wide as long, with the apical margin convex

and the lateral margins subrounded; ninth sternites, subtriangular, each being more than half as wide as the tenth tergite and with narrow and subrounded apices; spermatheca narrow, tubular, semicircular and rather pointed at either end.

Length: 2·2–2·8 mm.; *width*: 1·8–2·1 mm.

Geographical distribution: The type locality mentioned is "*Les Indes orientales*"; the examples before me are from the following localities:—

CEYLON: Kandy, —.vii.1908 (*G. E. Bryant*).

INDIA: Nilgiri Hills (South India) (*H. E. Andrewes*); Belgaum (Bombay Province); Assam Valley (*Doherty*); Assam; Sudiya (*Doherty*); Patkai Mountains (*Doherty*);

BURMA: Burma (*H. L. Andrewes*); Burma (*Downing*); Maymyo (*H. L. Andrewes*); Ruby Mines (*Doherty*); Tennasserim; Tavoy (*Doherty*).

MALAYA: Penang (*Bowring*); Penang, —.x.1913, 3, 4, 11.xi.1913 (*G. E. Bryant*); Perak (*Doherty*); Serdang, 29.viii.1925, 12.xi.1925, (*G. H. Corbett* and *B. A. R. Gater*); Kuala Lumpur, 9.viii.1931 (*H. M. Pendlebury*); Singapore (*Atkinson*); Singapore, Bukit Timah, 5.v.1909 (*G. E. Bryant*).

SUMATRA: Merang (*Doherty*); Serapoh (Deli), —.iv.1939, predaceous on *Aspidiotus destructor* Signoret (COCCIDAE) (*R. Aewibowo*).

JAVA: Java (*Bowring*); Silabintanah, 2.iv.1909 (*G. E. Bryant*).

BORNEO: Mt. Matang, W. Sarawak, —.xii.1913 (*G. E. Bryant*); Pengaron (*Doherty*); Martapura, S.E. Borneo, 1891 (*Doherty*).

SIAM: Renong (*Doherty*); Bankok (*H. Hillman*).

CHINA: Hongkong, —.vi.1908 (*F. W. Terry*); Hongkong (*Walker*); Ta Maon Id.

JAPAN: Japan (*G. Lewis*); Chiuzenji (*G. Lewis*); Kagoshima, 17.iv.1912 (*J. E. A. Lewis*).

Remarks: The varieties *centroguttata* Boheman and *japonicus* Weise have not been recognised above as distinct because they were distinguished chiefly by the size of the elytral spot which is very variable as examined in nearly one hundred and eighty examples, and in the long series it becomes difficult to decide the limits of such very unstable varieties. No significant relation appears to exist between the size of the spots and the geographical distribution.

Cryptogonus orbiculus var. *nigripennis* Weise (fig. 5M).

Cryptogonus orbiculus var. *nigripennis* Weise, 1895a : 137; 1900 : 425. Korschefsky, 1931 : 173.

Differs from the typical *orbiculus* in having entirely black elytra. The characters distinguishing this variety from the varieties of other species with entirely black elytra are given in the key to the species, etc., of the *orbiculus* group.

Geographical distribution : Originally recorded from Banuey (North Borneo), the examples before me are from the following localities :—

BORNEO : Sandakan (N. Borneo) (*W. B. Pryer*).

MALAYA : Kuala Lumpur, 9.viii.1931 (*H. M. Pendlebury*) ; Perak (*Doherty*).

SUMATRA : Merang (*Doherty*).

Cryptogonus orbiculus var. **lunatus** var. n. (fig. 5K).

Differs from the typical *orbiculus* mainly in the coloration of the elytra which are black except the apical one-third or a little more to one-sixth which is testaceous ; rather indistinctly marked from the black area and has the margin towards the base either shallowly concave, subtransverse or moderately convex. In the few examples from Borneo the front of the head in the females is not black as in *orbiculus* but rather reddish to dark brown. The structure of genitalia similar to that in *orbiculus*.

Length : 2·25–2·6 mm. ; *width* : 1·8–2·10 mm.

Type : A male in the British Museum ; BORNEO : Sandaka, North Borneo (*W. B. Pryer*).

Paratypes : In the British Museum, 1 ♀ with the same data as the type ; 1 ♂ and 1 ♀, Tamyang Lazary (*Schreiber* ; Fry's bequest) ; 1 ♀, Perak, Malaya (*Doherty*) ; 1 ♀, Merang, Sumatra (*Doherty*).

Cryptogonus orbiculus var. *apicalis* Weise (fig. 5G–J).

Cryptogonus orbiculus var. *apicalis* Weise, 1900 : 425.

Differs from the typical *orbiculus* in the elytral pattern. The elytron is black except for the testaceous, usually large (sometimes small) discal spot which is often confluent with the testaceous, apical one-third area of the elytron ; in addition there is the apical one-half to two-thirds of the moderately broad external border which is testaceous or dark brown. The actual size and the outline of the testaceous area varies from example to example, but the general pattern remains for the most part as described above.

Length : 2·3–2·7 mm. ; *width*, 1·8–2·0 mm.

Geographical distribution : Type locality, BORNEO ; the examples before me are from the following localities :—

BORNEO : Sandakan, N. Borneo (*W. B. Pryer*) ; Pengaron (*Doherty*) ; Martapura, S. E. Borneo (*Doherty*).

JAVA : Java (*Bowring's bequest*).

MALAYA : Kuala Lumpur, 9.viii.1931 (*H. M. Pendlebury*) ; Serdang, 12.x.1925 (*G. H. Corbett* and *B. A. R. Garter*), Perak (*Doherty*) Penang.

SIAM : Bankok (*H. Hillman*).

BURMA : Burma (*A. K. W. Downing*).

Cryptogonus orbiculus var. *fulvocinctus* (Mulsant) (fig. 5L).

Aspidimerus fulvocinctus Mulsant, 1853 : 266. Crotch, 1874 : 202.
Cryptogonus fulvocinctus (Mulsant), Weise, 1900 : 425, 427.

Except for the elytral pattern it is similar to *C. orbiculus* (Gyllenhal). Weise (1900) in his key to the related species distinguishes the two by the structure of the male genitalia in so far as the penis, in the lateral view, is sigmoid in *orbiculus* and straight, with the extreme tip bent downward, in *fulvocinctus*. In practice this difference seems to depend mostly on the condition and the angle at which the mounted parts of the genitalia lie in the lateral view and in the several examples studied by the present author in clove oil it was obvious that this difference alone was quite unreliable. It may, however, be pointed out that neither Weise nor the present author has seen the type, which was probably sent back to Motschulsky. The pattern of the elytra is given in the key to the species and varieties of the *orbiculus* group. The type locality, although stated to be Asia, might be Ceylon as most of Motchulsky's collection came from Ceylon.

Length : 2·54 mm. ; *width* : 2·0 mm.
Geographical distribution : Type locality Asia ; the examples before me are from :—

Ceylon : Kandy, —.vi.1908 (*G. E. Bryant*) ; Ceylon (*G. Lewis*).

Cryptogonus orbiculus var. *stellaris* (Mulsant) (fig. 5E).

Aspidimerus ? *stellaris* Mulsant, 1853(*a*) : 151. Crotch, 1874 : 202.
Cryptogonus orbiculus var. *stellaris* (Mulsant), Weise, 1898 : 237. Korschefsky, 1931 : 174.

Resembles the typical *orbiculus* in all respects except the shape of the elytral spot which is reddish brown, ill defined, subquadrate and situated in the middle of the length of the elytron.

The example (female) in the British Museum is presumably the type, bears identification label in Mulsant's handwriting, and is in a damaged condition.

Length : 3·3 mm. ; *width* : 2·2 mm.
Geographical distribution : China (?).

Cryptogonus orbiculus var. *sellatus* (Weise) (fig. 5N).

Cryptogonus fulvocinctus var. *sellatus* Weise, 1900 : 425. Korschefsky, 1931 : 173.

Differs from the typical *orbiculus* in the elytral pattern. The elytron reddish-testaceous, devoid of a black border along the external margin ; with the basal and three-fifths of the sutural margin bordered black ; the sutural border widens below the apex of scutellum, becomes concave towards the external margin and rather indistinct towards the apex ; the oblong-oval testaceous, discal, spot, so prominent in the typical *orbiculus*, indistinct but traceable in the example from Java. Male genitalia as in *orbiculus*.

Length : 2·5 mm. ; *width* : 2·0 mm.
Geographical distribution : Originally recorded from Ceylon, the example before me is from :—

Java (*Bowring's bequest*).

Cryptogonus orbiculus var. *antica* (Walker) (fig. 5).

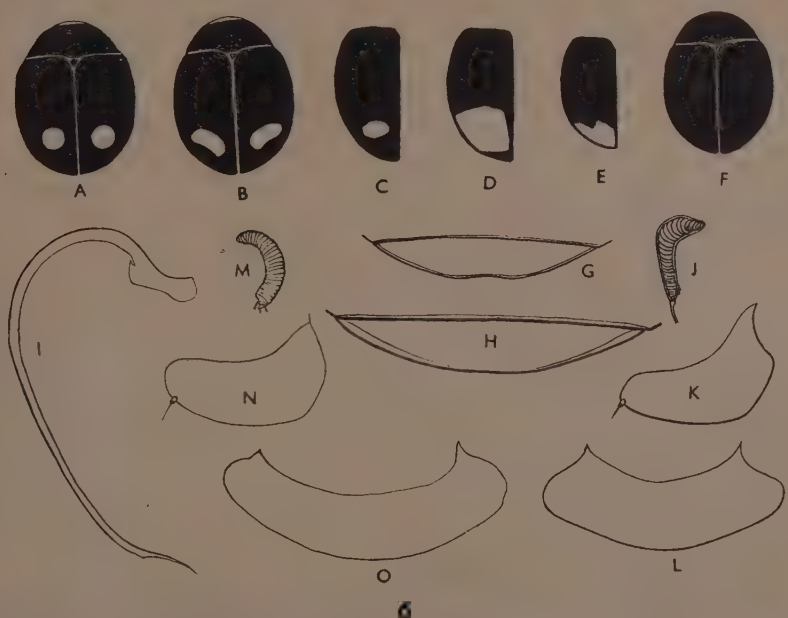
Coccinella antica Walker, 1859 : 219.
Aspidimerus fulvocinctus var. *fulvivestis* Mulsant, 1853 : 139. Crotch, 1874 : 202.
Cryptogonus fulvocinctus var. *fulvivestis* (Mulsant), Weise, 1900 : 425. Korschefsky, 1931 : 173.

Originally described as a distinct species, *Coccinella antica* Walker (1876), from a single example from Ceylon, it has not been catalogued by Gemminger and Harold (1876) or Korschefsky (1931). The type in the British Museum agrees in morphological details with *Cryptogonus orbiculus* and in coloration with *fulvivestis* Mulsant. The latter was originally described as a variety of *A. fulvocinctus* Mulsant, which, according to the opinion adopted in this paper, is merely a variety of *orbiculus*. The description of its coloration is given in the key to the species and varieties of the *orbiculus* group.

Geographical distribution : Ceylon. Type in the British Museum. Type locality, Ceylon ; as for *fulvivestis*, the locality mentioned is "Asia (Motschulsky)" and its type may very likely be also from Ceylon, because Motschulsky's collection was mostly from Ceylon.

Cryptogonus postmedialis sp. n. (fig. 6).

Body oblong-oval, convex and similar to *orbiculus* except that it is slightly narrower in the middle. Head yellowish in the males and black in the females ; eyes dark grey to



♂

Fig. 6.—A–F—Elytral patterns of *Cryptogonus postmedialis* sp. n. ; G—the last abdominal sternite of ♂ *C. orbiculus* ; H—the same of *C. postmedialis* ; I–L—*C. postmedialis* ; I—sipho ; J—spermatheca ; K—IX sternite ; L—X tergite ; M–O—*C. orbiculus* ; M—spermatheca ; N—IX sternite ; O—X tergite.

black in both sexes; clypeus and the mouth-parts piceo testaceous; antennae usually testaceous, sometimes reddish-testaceous. Pronotum black excepting the anterior margin with a narrow, reddish-brown border and in the males the antero-lateral angles each with a yellowish triangular spot, occupying the anterior half of the lateral margin, and pointing anteriorly. Scutellum black. Elytron black excepting usually a small, rounded, transversely oval or reniform yellowish or testaceous spot situated in the apical half and usually at two-thirds the length of the elytron, but never extending to as far as the middle even in the examples where the spot is large. In the latter case it extends laterally and towards the apex, leaving in the extreme cases only a narrow black border along the margins. Underside black excepting the anterior margins of the first pair and the apices of all the femora which are yellowish to testaceous in the males and reddish-testaceous in the females; tibia and tarsi testaceous in both the sexes.

Head finely and closely punctate in the males and rather coarsely so in the females; pubescence in both the sexes rather short, sparse and greyish; clypeus with the anterior margin widely emarginate in the middle and subrounded laterally, and invariably covering the labrum completely; antennae and mouth-parts, etc., as in *orbiculus*; pronotum with the punctation fine, well impressed and close; the pubescence, moderately long, rather sparse and greyish or yellowish grey; the lateral margins straight and the anterior and posterior angles subrounded and pointed respectively. Scutellum and elytra with the punctation and pubescence similar to that on the pronotum. Underside with the lateral parts of metasternum, the entire abdominal sternites, the femora of the first pair of legs coarsely and closely punctate and the remaining parts rather finely and sparsely punctate; pubescence very short, sparse grey and subdepressed. Prosternum and the abdominal sternites similar to those of *orbiculus* except that the sixth sternite in the males of *post-medialis* is not at all emarginate posteriorly. The male genitalia differs from that of *orbiculus* chiefly in the shape of the sipho and to a certain extent in the outline of the penis. Sipho is curved only near the proximal end and straight in the middle and towards the distal end; siphonal capsule with the inner branch very short and obliquely truncate and the outer one, securiform, fairly broad and nearly twice as long. Penis about four times as long as broad at the base, subparallel for nearly two-thirds its length and narrowing in the apical one-third to a subrounded apex and more or less sigmoid in lateral view. Paramera filiform, rather pointed at the apex, which bears a number of moderately long setae. Females with the tenth tergite and ninth sternites of nearly the same shape as those in *orbiculus*; spermatheca narrow, with a rather sharp bend at two-thirds its length and with the cornu sharply pointed.

Length: 2·0–2·5 mm.; *width*: 1·5–1·85 mm.

Type: A male in the British Museum; INDIA: Ranikhet, Kumaon Hills, U.P. (*H. G. Champion*).

Paratypes: 2 ♂ and 2 ♀ with the same data as the type; 1 ♂ and 2 ♀, West Almora, Kumaon Hills (*H. G. Champion*); 2 ♂ and 1 ♀, Khaula, 4,500 ft., Almora (*H. G. Champion*); 1 ♂, Upper Gumti Valley, W. Almora, —.iv.1919 (*H. G. C.*); 6 ♂ and 5 ♀, Sikkim; Singhik, 3,500–5,000 ft., 23–24.iv.1924 (*Major R. W. G. Hingston*); 1 ♀, Darjeeling Hills (*G. Rogers*); BURMA: 1 ♂, Mishmi Hills, Dingliang, 2,450 ft., 12.iii.1935 (*M. Steele*).

Remarks: This species is very closely related to *C. orbiculus* and seems to be confined to the higher altitudes in the Himalayas between the Patkai mountains in the east and the Kumaon Hills in the west, and might have been regarded as a sub-species of *orbiculus* had it not been for the more elongate form of the body, the distinctly post-medial spot on the elytra which always retain a black border along the margin even when the spot becomes large, the differences in the structure of

the genitalia and of the last abdominal sternite in the male. The elytral spot is rounded, usually a little less than one-third the width of elytron ; when enlarged it is transverse oval, subquadrate or reniform, but in none of the above examples is it longer than wide. In the examples from Sikkim and Darjeeling there is a greater variation in the shape of the spot than in the examples from Kumaon Hills.

Cryptogonus postmedialis var. **sushila** var. n. (fig. 5F).

Differs from the typical *postmedialis* in that the elytra are entirely black, the testaceous spot being altogether absent. The characters distinguishing this from *C. orbiculus* var. *nigripennis* Weise and *C. quadriguttatus* var. *nigriscens* var. n., which also have the elytra entirely black, are the comparatively elongate shape of the body, the structure of the genitalia and the entire apical margin of the sixth abdominal sternite in the male.

Length : 2·1–2·25 mm. ; *width* : 1·6–1·85 mm.

Type : A male in the British Museum ; INDIA : Kumaon Hills (*H. G. Champion*).

Paratypes : 2 ♀ with the same data as the type, 1 ♂, Assam, Patkai Mountains (*Doherty*) ; BURMA : 2 ♂, Mishmi Hills, Dingliang, 2,450 ft., 18.iii.1935 (*M. Steele*).

Cryptogonus laetus (Weise).

Aspidimerus laetus Weise, 1885 : 233.
Cryptogonus laetus (Weise), Weise, 1900 : 427. Korschefsky, 1931 : 173.

Like *orbiculus* in shape and size. Head yellowish-testaceous or reddish ; pronotum black with a narrow, reddish border along the anterior margin, a reddish spot on the anterior angles in the female ; scutellum black ; elytra testaceous, somewhat darker along the basal half of the suture, with narrow black border along all the margins. Underside black, the lateral parts of prothorax reddish, the margins of abdomen and the legs testaceous except that sometimes the femora are darkish.

Head finely and closely punctate, and with dense, whitish pubescence ; pronotum as closely but a little more finely punctate than the head, pubescence similar to that on the head or on the elytra ; the elytral punctation finer and sparser than that on the pronotum.

Length : 3·0 mm.

Geographical distribution : BURMA (type locality).

Remarks : I have not seen the type or an example of this species. The main characters mentioned above are from Weise's original description. As Weise stated that it is very much like *orbiculus* in shape and size, I have provisionally placed it in the *orbiculus* group.

Cryptogonus quadriguttatus (Weise) (fig. 7).

Aspidiphorus quadriguttatus Weise, 1895 : 326.
Cryptogonus quadriguttatus (Weise), 1900 : 428. Korschefsky, 1931 : 174.

Body oblong-oval to subrounded, moderately convex but without a prominent humeral callus. Front of the head yellowish testaceous in males and black in females ; eyes greyish or black ; clypeus and mouth-parts reddish testaceous in both the sexes but antennae testaceous in males and reddish testaceous in females. Pronotum black except the anterior margin and the antero-lateral angles ; the former with a narrow reddish brown border in both the sexes and the latter each with a triangular yellowish testaceous spot

with the narrower angle pointing anteriorly in the males and a similar spot usually smaller and reddish brown in the females. Elytron black, except the two rounded spots, situated one behind the other in the anterior and posterior halves of the elytron and varying in colour from yellowish testaceous to reddish brown irrespective of the sex of the examples. The diameter of each spot is a little less than two-thirds the maximum width of the elytron. The first spot is situated a little before the base, between the humeral callus and the suture and nearer the latter than the external margin. The second spot, situated in the apical half, is as distant from the suture as the first and lies immediately posterior to the transverse middle line of elytron. Thus the four spots on the two elytra lie equidistant from one another like the corners of a square. Underside black excepting the testaceous or reddish brown anterior angles of prothorax, and the reddish brown to testaceous legs. Of the latter the femora of the first pair with the external margin bordered testaceous to reddish brown and the other parts varying in colour from reddish to pale brown.

Head moderately coarsely and closely punctate in the males and distinctly coarsely, impressedly and closely so in the females ; pubescence moderately long, rather sparse and

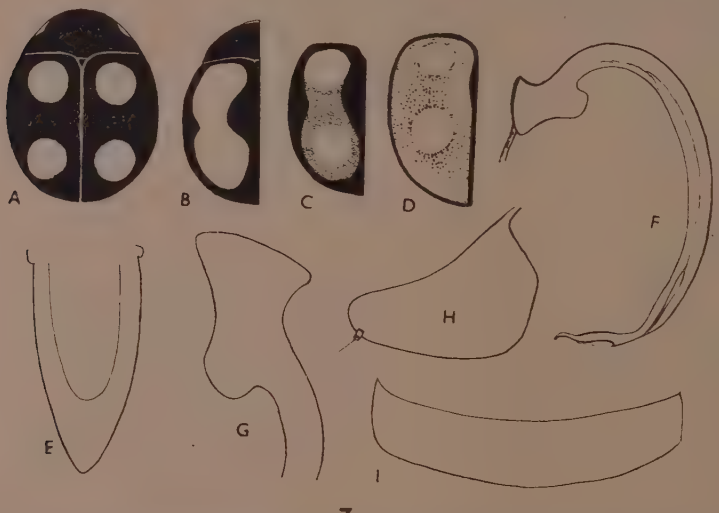


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Fig. 7.—*Cryptogonus quadriguttatus* (Ws.) : A–D—elytral patterns ; E—outline of penis ; F—sipho ; G—siphonal capsule ; H—IX sternite ; I—X tergite.

greyish ; clypeus completely covering the labrum, narrow anteriorly and with the anterior margin widely emarginate in the middle and subrounded laterally ; antennae with the first segment large and transverse-oval, the second a little smaller and subtriangular, the flagellum, consisting of the last seven segments, club-shaped, with the seventh segment largest, nearly as wide as long, the eighth a little smaller but larger than the ninth or the terminal segment ; mentum cordiform, with the anterior margin transverse except for a small quadrate notch in the middle, and with the ventral surface less coarsely and sparsely punctate. Pronotum with fine, moderately close punctation and with long, moderately dense and greyish pubescence ; lateral margins straight, the anterior and posterior angles rather pointed. Scutellum and elytra with the punctation and pubescence similar to that on the pronotum. Underside finely to moderately coarsely and rather sparsely punctate excepting the lateral parts of metathorax and the abdominal sternites where the punctures are coarse, impressed and close ; punctation short, sparse and greyish on the entire ventral

surface. Prosternum typical of the group *orbiculus* ; mesosternum very widely and shallowly emarginate anteriorly. Of the abdominal sternites, the first longest in the middle, the second to fourth short and subequal, the fifth and sixth a little longer and subequal, the latter with a weak emargination in the middle of the posterior margin in the male. Male genitalia : sipho moderately curved near either end and less narrow than in most species of the genus ; siphonal capsule broad, with the outer branch longer and wider than the inner branch ; penis oblong, gradually narrowing from the base to a rather narrow and subrounded apex and a little longer than the filiform paramera which bear a small number of moderately long setae near the apex. Females with the tenth tergite distinctly transverse, over four times as wide as long, moderately curved and lined with a row of short hairs apically and with the lateral margins subparallel ; ninth sternites subtriangular with the base fairly broad and nearly half as wide as the tenth tergite, and the apices subrounded each bearing a short stylus ; spermatheca moderately broad, semicircular and slightly narrow at either end.

Length : 2·3–2·7 mm. ; *width* : 1·9–2·25 mm.

Geographical distribution : India : Sikkim (type locality) ; Korschefsky (1931) in his catalogue also mentions Formosa under its geographical distribution, but this appears to be an error. The specimens before me are from the following localities :—

India : Sikkim ; Kalimpong, 4,000 ft., 27.iii.1924 (*Major R. W. G. Hingston*) ; Assam ; Patkai Mountains (*Doherty*) ; Sudiya (*Doherty*) ; Naga Hills (*Doherty*) ; Bengal ; Buxar Duars (*D. Nawrojee*) ; Haldwani, Kumaon (U.P.), 28.iv.1923 (*H. G. Champion*).

Remarks : In 1900, Weise, stating that *Aspidiphorus* was a type error, transferred the species to *Cryptogonus*. The four examples from Sikkim are not variable while the long series from Assam show considerable variation in size and the colour of elytral spots which vary from yellowish testaceous to reddish brown.

Cryptogonus quadriguttatus var. **confluens** var. n. (fig. 7B, C).

Differs from the typical *quadriguttatus* in that the two yellowish or reddish testaceous spots on the elytron become confluent with each other, and in the examples where they also become large the elytron has a moderately broad black border along all its margins excepting the apical half of the external margin where the border is narrow. There is also left a large, semicircular black spot in the middle of the sutural border, forming a rounded spot with its counterpart of the other elytron.

Length : 2·7 mm. ; *width* : 2·2 mm.

Type : A male in the British Museum ; India : Assam, Patkai Mountains (*Doherty*).

Paratypes : 12, both sexes, in the British Museum ; same data as the type.

Cryptogonus quadriguttatus var. **nigriscens** var. n.

Similar in structure to the typical example except for the colour-pattern. Males with the front of the head and antennae testaceous, the eyes light to dark grey, the clypeus and mouth-parts piceous to black ; females with the head and its appendages entirely black.

Pronotum in the male similar to that in the typical species but in the female it is entirely black. Elytra entirely black with, in some examples, a single or a pair of small, reddish spots in the same position as the testaceous spots in the typical species. Underside entirely black or with the legs reddish brown to dark brown.

Type: A male in the British Museum; INDIA: Assam, Patkai Mountains (*Doherty*).

Paratypes: Both sexes, in the British Museum; nine with same data as the type; one from Assam, Naga Hills (*Doherty*).

Remarks: In the *orbiculus* group several species tend to exhibit parallel cases of colour-variation. Thus the above variety, *Cryptogonus orbiculus* var. *nigripennis* Weise and *C. postmedialis* var. *sushila* are all very nearly black and similar to one another in coloration. For the characters that distinguish them the key to the *orbiculus* group may be consulted.

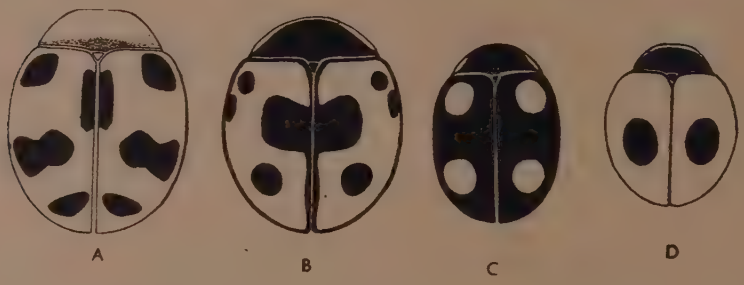

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FIG. 8.—A—*Aspidimerus spencii* Mulsant; B—*Cryptogonus schraiki* Mader; C—*Cryptogonus nitidus* sp. n.; D—*Cryptogonus bimaculatus* sp. n.

Cryptogonus bimaculatus sp. n. (fig. 8D).

Body subrounded, convex, without a distinct humeral callus. Front of the head fulvous in males and reddish testaceous in females; eyes black in both sexes; antennae, anterior margin of clypeus and mouth-parts, excepting the piceous cardo and mentum, reddish testaceous. Pronotum for the most part black with the anterior margin with a narrow or fairly broad reddish testaceous border; the lateral margins each usually with a large, triangular, yellowish testaceous spot in the male and a rather short, subtriangular, testaceous spot in the female; in both sexes the spot occupies the anterior half to two-thirds of the length of the lateral margin. Scutellum black. Elytra reddish testaceous, each with a very narrow, fuscous border along the basal margin and a large, subrounded to oblong-oval, discal, black spot which is nearly half as wide and a little more than one-third as long as the elytron, and is equidistant from the base and apex but nearer the suture than the lateral margin. Underside mostly piceous black; the elytral epipleurae, external borders of abdominal sternites and the greater parts of legs reddish testaceous; the anterior angles of prothorax and the anterior margins of the first pair of femora bordered yellowish testaceous.

Head finely and moderately closely punctate in the male and rather coarsely and fairly closely so in the female; pubescence moderately long, sparse and yellowish. Pronotum with fine and moderately close punctation and moderately long, fairly dense and yellowish grey pubescence; the anterior and posterior angles subrounded and the lateral margins

straight. Elytra with the punctation and pubescence similar to that on pronotum. Underside moderately coarsely punctate except for the very coarsely punctate lateral parts of metathorax and the finely punctate femora of the last two pairs of legs. The first abdominal sternite longest, the second to fourth short and subequal in the middle, the fifth and sixth a little longer than the latter and subequal; in the male the sixth slightly emarginate in the middle of the posterior margin. Male genitalia: sipho very narrow, strongly curved almost in an arch, the outer branch of siphonal capsule longer than the inner one; penis nearly as wide at the base as in the middle, after which narrowing gradually to a rather pointed apex; paramera filiform, slightly shorter than penis, a little bent in the middle, and with a dozen or so long setae towards the apex. In the female each half of the ninth sternite with indistinct stylus, and the tenth tergite very broad though less than the total width of the sternites.

Length: 2·15–2·3 mm.; *width*: 1·8–2·0 mm.

Type: A male in the British Museum; INDIA: Assam, Patkai Mountains (*Doherty*).

Paratypes: Five, both sexes, in the British Museum; two same data as the type; one from ASSAM, Naga Hills (*Doherty*); one, ASSAM; and one BURMA: Mishmi Hills, 1935 (*M. Steele*).

Cryptogonus schraiki Mader (fig. 8B).

Cryptogonus schraiki Mader, 1933 : 80.
Cryptogonus schraiki var. *urbani* Mader, 1933 : 80.

The colour-pattern and the important external characters have been given in the key to the species of the *orbiculus* group, to which this species seems to belong as judged by the structure of prosternum and its carinae. A "co-type" each of *C. schraiki* and its var. *urbani* in the British Museum shows that there is hardly any difference between the two except that in the former the external border, a little below the shoulders, is slightly faded out, with the result that the second spot situated near it appears to be separated from it. The connection between the two is, however, traceable by the intermediate dark brown area. This slight difference in coloration, which may vary from specimen to specimen, need hardly be considered sufficient for a separate name. Both the examples seen are females, with the front of the head piceous black, and it has not been possible to study their genitalia.

Lengths: 2·8–3·2 (♀) mm.; *width*: 2·4 mm. (♀).

Geographical distribution: CHINA: Szetschwan (type locality); the two examples studied are from Tatsienlu-Kiulung (*Em. Reitter*).

Cryptogonus trioblitus (Gorham) (figs. 9C, G, H).

Aspidimerus trioblitus Gorham, 1895 : 690. Korschefsky, 1931 : 173.

Body oblong-oval to rather subrounded and moderately convex. Head in the male yellowish testaceous with sometimes a faint brownish mark in the centre, and in the female black with a yellowish longitudinal stripe near each eye. Pronotum black except the anterior half of the lateral margins, each of which has a quadrate, yellowish spot. Elytron yellowish testaceous, with the basal and apical margins and part of the external margin near the latter, with black borders. The basal border wider in the middle; the apical rather subquadrate and projecting into the yellowish area of the disc; the external rather indistinctly marked off and narrow. In addition to the black borders, there are two black spots on the elytron: the first subrounded, confluent with the external margin and placed slightly nearer the base than the apex: the second semicircular, lying in

transverse line with the first and along the suture, forming a rounded spot with its counterpart on the other elytron. Underside black excepting the legs which are dark or reddish-testaceous with the apices of femora rather testaceous.

Head with moderately coarse and close punctation and rather long and sparse and yellowish-grey pubescence in both the sexes; clypeus weakly emarginate anteriorly and completely covering the labrum. Pronotum with rather fine, moderately close and less impressed punctation and with the pubescence similar to that on the head, the lateral margins straight and the anterior and posterior angles rather pointed. Scutellum and elytra with fine and moderately close punctation and with the pubescence similar to that on the pronotum. Underside coarsely punctate except on the pro- and mesosternum, the median part of the metasternum, the elytral epipleurae and the femora of the last two pairs of legs; pubescence short, yellowish, and moderately close and subdepressed. Prosternum and abdominal sternites as in *quadriguttatus*. Male genitalia similar to that of the latter except that the siphonal capsule is with a narrower outer branch and the penis widest in the middle, and broadly rounded at the apex. Female genitalia unknown.

Length: 1·5–1·7 mm.; *width*: 1·9–2·15 mm.

Geographical distribution: Type locality Burma; the examples before me are from the following localities :—

Burma: Burma (*A. K. W. Downing*).

India: Assam, Patkai Mountains (*Doherty*); Kumaon Hills, U.P., Gori Valley, 7,000 ft. (*H. G. Champion*).

Remarks: This species is closely related to the *quadriguttatus* and *ariasi* group of species, all of which fall in the *orbiculus* group on account of the structure of prosternum, pronotum, abdominal sternites, etc. Geographically, too, all these are closely related, being found mostly at higher altitudes, in the central and eastern Himalayas.

Cryptogonus ariasi (Mulsant) (figs. 9B, D, E).

Aspidimerus ariasi Mulsant, 1853 : 265. Crotch, 1874 : 202. Weise, 1900 : 427. Korschefsky, 1931 : 172.

Body subrounded, convex. Head yellowish testaceous except the black eyes, the rather dark brown clypeus, the testaceous antennae and mouth-parts. Pronotum black with a yellowish testaceous spot at each of the anterior angles or with a very wide testaceous border along the lateral and anterior margins which leaves the pronotum with only a transverse-oval black spot in the middle of its base. Scutellum black or fuscous. Elytra testaceous, without a humeral black spot; each with the first black spot subrounded, moderately large, situated a little below the humeral callus, a little anterior to the transverse middle line, the second spot lying in transverse line with the first, along the suture and with its counterpart on the other elytron forming a complete rounded or cordiform spot of almost the same size as the first; third spot much smaller, rounded and situated in the centre of the posterior half of the elytron. Underside black to piceous excepting the reddish brown apex of abdomen and greater part of legs and the testaceous anterior part of prothorax, the anterior margin of femora of the first pair of legs and the elytral epipleurae.

Head finely and closely punctate in the male but rather coarsely so in the female, with the pubescence short, rather sparse and yellowish; clypeus broadly emarginate in the middle of the anterior margin and moderately rounded laterally; antennae with the flagellum club-shaped; labrum and other mouth-parts covered by the clypeus; mentum cordiform, with a small notch in the middle of the anterior margin and moderately closely and rather coarsely punctate ventrally. Pronotum finely and closely punctate, with the pubescence as on the head but a little longer, lateral margins straight with the anterior and

posterior angles hardly rounded. Scutellum and elytra with the punctation and pubescence similar to that on the head. Underside coarsely punctate excepting the pro- and mesosternum, the median basal part of metasternum, the elytral epipleurae and the femora of the last two pairs of legs ; pubescence as on the upper surface. Of the abdominal sternites, the first longest in the middle, the second to fourth short and equal to one another, the fifth and sixth subequal and each slightly longer than the fourth segment ; in the male the sixth segment is weakly emarginate in the middle of the apical margin. Male genitalia with the sipho similar in shape to that of *C. quadriguttatus*, the penis long, moderately broad, rather spathulate with the apex much narrower ; the paramera nearly as long as the penis, very narrow, pointed near the apex which has only a few short setae. Females with the tenth tergite fairly broad, curved posteriorly and subrounded laterally ; the ninth sternites rather ovate, each with a very small stylus at the apex ; spermatheca nearly twice as long as wide, weakly curved in the middle and pointed at either end.

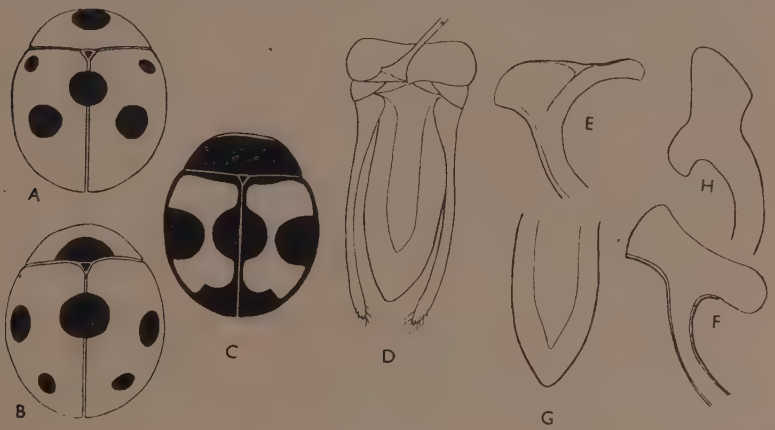

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Fig. 9.—A—*Cryptogonus hingstoni* sp. n. ; B—*Cryptogonus ariasi* (Muls.) ; C—*Cryptogonus trioblitus* (Gorh.) ; D—male genitalia of *C. ariasi* ; E—siphonal capsule of the same ; F—the same of *C. hingstoni* ; G—outline of penis of *C. trioblitus* ; H—siphonal capsule of the same.

Length : 2·8 mm ; *width* : 2·2 mm.

Geographical distribution : The type locality is North India ; the examples before me are from the following localities :—

India : Sikkim, Singhik, 5,000 ft., 24.iv.1924. (*Major R. W. G. Hingston*) ; Kumaon Hills ; Haldwani ; West Almora Ranikhet ; Khaula, 4,500 ft. (*H. G. Champion*).

Burma : Lebong, 5,000 ft., —.ix.1908 (*H. M. Lefroy*) ; Lebong, —.vi.1909 (*Irwin*).

Cryptogonus hingstoni sp. n. (fig. 9A, F).

Very closely related to *C. ariasi* (Mulsant) with which it agrees in the general shape and size of the body, the punctation and pubescence, the structure of prosternum and the relative length of the abdominal sternites. However, the two species differ in the markings on the pronotum and elytra and in the structure of male genitalia. Pronotum with a transverse oval to subrounded black spot along the anterior margin, thus leaving a broad

testaceous border along the basal and lateral margins ; each of the anterior angles with a yellowish-testaceous subtriangular marking. Elytra testaceous with the black spots as follows : the first spot small, rounded and situated on the humeral callus ; the second larger, sutural, forming a completely rounded spot with its counterpart on the other elytron and situated a little anterior to the middle or at nearly two-thirds the length of the suture; the third of the same size and shape as the complete sutural spot and situated on the transverse middle line, a little nearer the suture than the lateral margin. Of the male genitalia, sipho thin and gradually narrowing from the proximal to the distal end ; strongly curved near the former, siphonal capsule with the outer branch very much expanded and subtriangular, the inner though equally long, is narrow and rather tubular ; penis nearly of the same shape as in *ariasi*, but the paramera very slender, regularly curved in the middle, distinctly longer than the penis, and with a few short setae at the apices. Female genitalia not known.

Length : 2·8 mm. ; *width* : 2·2 mm.

Type : In the British Museum ; India : Sikkim, Singhik, 5,000 ft., 24.iv.1924 (*Major R. W. G. Hingston*).

Paratypes : Three (one with the head and abdomen dissected), same data as the type.

Remarks : Undoubtedly this species is very closely related to *ariasi*. The distinguishing characters mentioned above, though relatively small, cannot, however, be lightly overlooked until longer series of the two show considerable bridging of the gap.

2. The *nitidus* group.

This group contains the single, aberrant species described below. It is similar in the shape of prosternal carinae and pronotum to the *orbiculus* group of species, but is distinct from all of them by the elongate-oval form of the body, very coarse punctation and short, rather suberect pubescence, and the shining upper surface of the body.

Cryptogonus nitidus sp. n. (fig. 8C).

Body elongate-oval, strongly convex, dorsal surface shining black. In female, head black, eyes dark grey, anterior margin of clypeus, antennae and mouth-parts dark brown ; pronotum black except that the lateral margins each have a subtriangular dark brown spot near the anterior angles. Elytron black except two rounded, yellowish spots nearly two-fifths as wide as elytron, situated one behind the other as follows: the first a little below the base, between the humeral callus and the suture, slightly nearer the former than the latter ; the second as far from the suture as the first and a little below the transverse middle line of elytron. Underside black except the last two abdominal sternites and the legs which are castaneous ; femora of the first pair very dark in the middle and along the external margin.

Head with coarse and fairly close punctures and greyish, moderately long and sparse pubescence ; clypeus concealing the labrum completely ; pronotum with less coarse punctures than those on the head, but with similar pubescence. Elytra with very coarse rather shallow and fairly close punctures which distinguish this species from all others in the tribe ; pubescence yellowish, moderately long, sparse and rather suberect. Underside with moderately coarse punctures except on femora of the first pair of legs which are coarsely punctate ; pubesence yellowish, rather short and sparse. Prosternal carinae

subparallel, slightly narrowing anteriorly and meeting each other in a rounded arch a little distance before the anterior margin of the segment ; the enclosed area flat, very finely and sparsely punctate.

Length : 3·2 mm. ; *width* : 2·0 mm.

Type : Female in the British Museum ; Burma, Manipur (*Doherty*).

3. The *fulvoterminatus* group.

Key to the species of the fulvoterminatus *group.*

1. Body 2·0 mm. long, oblong-oval, narrower and subparallel in the middle, appearing rather elongate ; pronotum black except the testaceous lateral margins ; elytron black except the testaceous external margin, apex and one rounded spot near the suture at one-third of the length. (Loc. Burma) *lepidus* Weise

   Body 2·25–2·75 mm. long, subrounded to shortly oval and broadly rounded in the middle ; pronotum black except the broad and testaceous anterior and lateral margins 2

2. Body subrounded, subhemispherical, humeral callus indistinct ; elytra black except the testaceous apical one-third which has the basal margin near the suture evenly rounded (fig. 10A) ; penis slightly wider in the middle, gradually tapering to a rounded apex. (Loc. Java, Malaya, Burma).
   fulvoterminatus (Boheman)

   Body oblong-oval, less convex, humeral callus fairly distinct ; elytra black except the testaceous, apical one-third which is usually margined black ; in addition, sometimes a fairly wide longitudinal, testaceous band in the middle of elytron joining the apical testaceous area 3

3. Elytron rounded at the apex, black except the testaceous, apical half which is narrowly margined black and is connected with the fairly wide longitudinal, testaceous band running nearly in the middle of elytron ; siphonal capsule with the outer branch short and subquadrate, penis oblong and fairly broad but not wider in the middle than at the base, apex narrower. (Loc. Burma) . . . . . **downingi** sp. n.

   Elytron slightly tapering towards the apex which is rather pointed, black except the testaceous apical one-third with its margin towards the base subtransverse although slightly undulating, being a little convex in the middle and at the external margin ; siphonal capsule with the outer branch short and triangular ; penis elongate, gradually tapering from the base to a narrow apex. (Loc. Sikkim, Assam, India) . . **himalayensis** sp. n.

Cryptogonus fulvoterminatus Boheman (fig. 10).

Cryptogonus fulvoterminatus Boheman, 1858 : 206–207. Weise, 1898 : 238 ; 1900 : 427. Korschefsky, 1931 : 173.
Cryptogonus flavoterminatus Crotch, 1874 : 203. Korschefsky, 1931 : 173.
Scymnus birmanicus Gorham, 1895 : 693 (not *Cryptogonus birmanicus* Gorham, 1895 : 691).
Cryptogonus fulvoterminatus var. *birmanicus* (Gorham), Sicard, 1912 : 503. Korschefsky, 1931 : 173.

Body subrounded and convex. Front of the head yellowish testaceous in the male and testaceous to slightly reddish in the female ; eyes black ; clypeus, antennae and mouth-parts, except the dark brown mentum, testaceous in both sexes. Pronotum for the most part black : in male the anterior margin with broad testaceous border, and the lateral margins each with a large, triangular, yellowish testaceous spot with the base nearly as wide as the length of the lateral margin ; in female the anterior and lateral margins with broad, reddish testaceous borders. Scutellum and elytra black, the latter with the apical one-third to one-fourth reddish brown to testaceous. The latter area extends along the apical one-fourth of the sutural and two-fifths of the external margins of elytron, and is convex towards the base in the form of a moderately broad regular arc. Underside black excepting the external borders of the abdominal sternites, the elytral epipleurae and the expanded femora which are reddish brown to testaceous.

Head in both sexes with moderately fine, impressed and fairly close punctation and rather short, sparse and yellowish pubescence ; clypeus widely emarginate in the middle anteriorly and subrounded laterally, completely covering the labrum ; antennae with the first segment broadly oval, second subtriangular and the remaining seven forming a club-shaped flagellum ; mentum with the anterior margin transverse, slightly notched in the

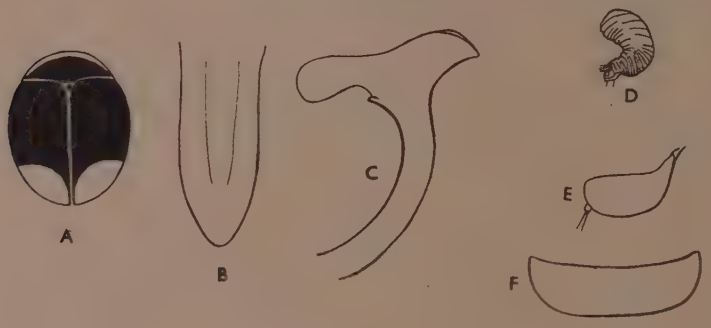

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Fig. 10.—*Cryptogonus fulvoterminatus* Boh. ; A—outline of the body ; B—outline of penis; C—siphonal capsule ; D—spermatheca ; E—IX sternite ; F—X tergite.

middle, and with the ventral surface coarsely punctate. Pronotum moderately finely and closely punctate ; with short to moderately long, dense, greyish pubescence ; the lateral margins narrow, straight, and with the anterior and posterior angles rather pointed. Elytra with punctation and pubescence similar to that on pronotum. Underside with moderately fine and fairly close punctation except on the prosternum, the first pair of femora, the lateral parts of metathorax and the abdominal sternites which are coarsely punctate ; pubescence rather short, sparse and mostly subdepressed ; the first abdominal sternite longest, second to fifth short and subequal in the middle, sixth slightly longer than the preceding, fairly wide and deeply emarginate in the middle of the posterior margin in male and entire in female. Male genitalia : penis slightly widening from the base towards the middle and gradually narrowing from the latter towards a moderately broad and subrounded apex ; paramera filiform, slightly bent near the base and with a few moderately long setae towards the apex ; sipho very narrow, strongly curved, almost in a circle, siphonal capsule with the outer branch short and subtriangular, the inner branch slightly narrower and longer. In female, the spermatheca is moderately broad, bent in the middle, forming a semicircle, with blunt, broad, rounded corner and a narrow and short ramus ;

ninth sternites slightly narrow laterally, subrounded posteriorly and each half with an oblong stylus bearing four or five long setae : tenth tergite at the base nearly as wide as the two sternites together, narrower apically and subrounded laterally.

Length : 2·18–2·3 mm. ; *width* : 1·7–1·85 mm.

Geographical distribution : Java (type locality) ; Burma (Gorham, 1885). The examples studied are from the following localities :—

Malaya : Kuala Lumpur, 14.viii.1923, from beach (*G. H. Corbett* and *B. A. R. Gater*) ; Perak (*Doherty*).

Burma : Tenasserim, Tavoy (*Doherty*).

Remarks : Gorham described *Scymnus birmanicus* Gorham (1885 : 693) as a distinct species. Its type was examined by Sicard (1912), who considered it to be synonymous with *Cryptogonus fulvoterminatus* Boheman and remarked that only the apical spot was a little larger. This species is not to be confused with *Aspidimerus birmanicus* (Gorham), which was described as a species of *Cryptogonus* in the same publication on page 691.

Cryptogonus lepidus (Weise).

Aspidimerus lepidus Weise, 1885 : 233.
Cryptogonus lepidus (Weise), Weise, 1900 : 428. Korschefsky, 1931 : 173.

Remarks : No example of this species has been available to me for study. It has been placed in *fulvoterminatus* group as Weise himself pointed out its closer relationship to the latter species. Contrary to his later practice, Weise did not describe its male genitalia. The external characters mentioned by him have been summarised in the key to the species of the *fulvoterminatus* group.

Length : 2·0 mm.

Type locality : Burma ; also recorded from Assam (Weise, 1900).

Cryptogonus downingi sp. n. (Pl. 1, fig. 5).

Aspidimerus nigrovittatus Sicard (not Motschulsky, 1866), 1912 : 501.

Body oblong-oval, convex, with the humeral callus fairly distinct. In the male, head testaceous except the greyish eyes and the slightly reddish testaceous anterior margin of clypeus, antennae and mouth-parts. Pronotum black excepting a narrow brownish border along the anterior margin and a yellowish testaceous, triangular spot at each of the anterior angles ; the spot hardly extends beyond the middle of the lateral margin. Scutellum black. Elytron black except the testaceous apical half which is, however, narrowly margined black, and a fairly wide longitudinal testaceous stripe in the basal half, connected with the testaceous apical area. The testaceous stripe lies between the humeral callus and the suture, is parallel to the latter and becomes narrow from the base towards the middle of elytron. Underside black to piceous except the anterior angles of prothorax, elytral epipleurae and the greater part of the legs which are testaceous.

Head, in the male, fairly coarsely and closely punctate ; pubescence moderately long, fine, sparse and yellowish ; clypeus narrower towards the anterior margin which is fairly deeply emarginate in the middle and subrounded laterally ; antennae with the first segment broadly oval and the last seven forming a club-shaped flagellum ; mentum with the anterior margin truncate except for a small, quadrate notch in the middle, the punctation on the ventral surface of mentum moderately coarse and close. Pronotum with coarse, fairly close

and impressed punctation and with fairly long, dense and greyish to yellowish-grey pubescence ; the lateral margins are straight and the anterior and posterior angles pointed. Scutellum subtriangular, finely and rather closely punctate and with a few fine, moderately long greyish hairs. Elytra with the punctation a little less coarse than that of pronotum but equally close and impressed ; pubescence shorter than that of pronotum, moderately dense, fine and yellowish-grey. Underside coarsely and moderately closely punctate except the pro- and mesosternum, the middle of metasternum, the elytral epipleurae and the femora of the last two pairs of legs which are rather finely punctate ; pubescence more or less uniform, short, less dense subdepressed and yellowish. Prosternum with the carinae subparallel for nearly the basal two-thirds of their length and narrower in the remaining one-third and meeting each other in a rounded arch at the anterior margin of the segment ; the enclosed area sparsely and rather finely punctate ; mesosternum widely and fairly deeply emarginate at middle of the anterior margin. The first abdominal sternite longest in the middle, the second to fourth and the sixth short and equal to one another in the middle, but the fifth slightly longer than the latter ; the sixth sternite not emarginate in the middle of the apical margin. Of the male genitalia, sipho curved regularly near the proximal end, siphonal capsule with the outer branch short and subquadrate ; penis oblong but fairly broad, narrowing gradually in the apical half.

Length : 2·8 mm. ; *width* : 2·15 mm.

Type : A male in the British Museum ; Burma : (*A. K. W. Downing*).

Remarks : The above example from Burma was identified by Sicard (1912) as *Aspidimerus nigrovittatus* Motschulsky (1866), originally reported from Ceylon. Although its type is not available and Motschulsky's description of the species is very brief, the above example does not seem to fit in with Motschulsky's description at all, which is as follows : "Subovatus, convexus, nitidus, sparsim puberulus, pallide flavus, elytris utrinque vitta lata nigra, apice non attinguenda." Weise (1900 : 428) was uncertain as to the genus to which *nigrovittatus* belonged and no example of the tribe has been seen by any subsequent or the present writer to which the above description could be reasonably applied.

Cryptogonus himalayensis sp. n. (fig. 11).

Body shortly oval, rather narrow towards the apex, less convex, with the humeral callus fairly distinct. In both sexes, the head testaceous except the greyish eyes and the brownish clypeus, antennae and mouth-parts. Pronotum black except the anterior and lateral margins with broad, testaceous borders ; the anterior angles are yellowish testaceous. Pronotum and the basal two-thirds of elytra black, the apical one-third of the latter testaceous except for a small piceous, rounded spot or a narrow border at the extreme apex of each elytron ; the basal margin of the testaceous apical area subtransverse although slightly undulating, being a little convex in the middle and at the external margin. Underside testaceous except the piceous meso- and metasternum.

Head rather finely and closely punctate in both sexes, pubescence long, fairly dense and yellowish ; the anterior margin of clypeus narrower, moderately widely emarginate in the middle and subrounded laterally ; antennae with the first segment transverse oval and the last seven segments together forming a club-shaped flagellum ; mentum with the anterior margin truncate except for a small notch in the middle, ventral surface with moderately coarse punctation and with short and sparse pubescence. Pronotum with fine and fairly close punctation and long, dense and yellowish to yellowish-grey pubescence ; lateral

margins straight with the anterior and posterior angles rather pointed. Scutellum and elytra with the punctation and pubescence similar to that of the pronotum. Underside with coarse punctation on the lateral parts of metasternum and on the abdominal sternites, moderately coarsely punctate on the prosternum, mesosternum, elytral epipleurae and femora of the first pair of legs ; the rest of the underside finely punctate ; pubescence moderately long, dense and yellowish. Prosternal carinae though subparallel in the basal half, nevertheless converging in the apical half to meet each other in a rounded arch at the anterior margin of the prosternum ; the area enclosed by the carinae moderately coarsely punctate and sparsely pubescent. Mesosternum widely emarginate at the anterior margin. Of the abdominal sternites, the first longest in the middle, the second to third and sixth shorter and subequal, the fifth a little longer than the preceding or the sixth segment which is not emarginate posteriorly in the male. Male genitalia with the sipho thin, widely curved proximally and with the outer branch of the capsule short and subtriangular and the inner long and rather spathulate ; penis elongate, gradually tapering from the base towards a narrow apex, paramera narrow, a little shorter than the penis and with a small number of short hairs at the apex. Females with narrow and subquadrate tenth tergite, each half of ninth sternite ovate ; the spermatheca nearly half as wide as long, subrounded at either end and slightly bent in the middle.

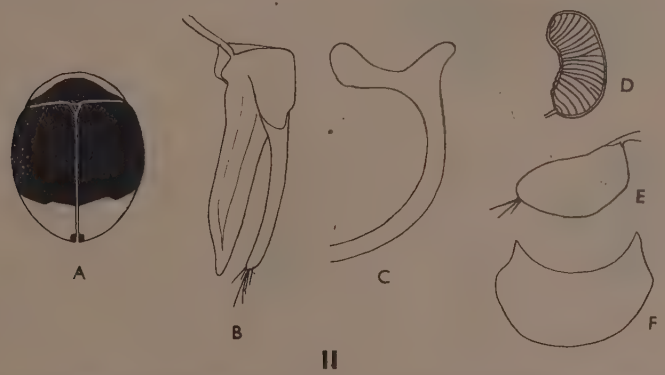

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Fig. 11.—*Cryptogonus himalayensis* sp. n. : A—outline of the body ; B—part of male genitalia ; C—siphonal capsule ; D—spermatheca ; E—IX sternite ; F—X tergite.

Length : 2·25–2·50 mm. ; *width* : 1·8–2·15 mm.

Type : In the British Museum ; Burma, Ruby Mines (*Doherty*).

Paratypes : In the British Museum : one male with the same data as the type ; one female from India : Sikkim : Singhik, 3,500 ft., 23.iv.1924 (*Major R. W. G. Hingston*).

4. The *complexus* group.

This group contains the single species described below. It is similar in body-form to the *flavoterminatus* group, but recalls the colour variations of *C. orbiculus* (Gyllenhal) and the species allied to it. It may, however, be easily distinguished from other groups by the prosternal carinae being narrow and subparallel in the basal half and widening in the anterior half before meeting each other in an arch at the anterior margin.

Cryptogonus complexus sp. n. (fig. 12).

Body small, 2–2·25 mm. long, rounded-oval, subhemispherical, very little larger in females than in males. Front of the head yellowish testaceous in males and somewhat reddish testaceous in females; eyes dark grey, antennae testaceous, anterior margin of clypeus and mouth-parts brown. Pronotum black excepting the moderately broad, brown, anterior border and the lateral margins, each with a large, yellowish testaceous, triangular spot which is narrowly pointed posteriorly and extends nearly as far as the base of pronotum. Elytron black except for a distinctly oblong-oval, reddish-testaceous discal spot, communicating with the reddish testaceous apical one-third of elytron. The black area on either side of the suture and between the discal spot and the apical marking is convex towards the apex, while the area along the lateral border is concave. In several examples the apical area is also black so that the elytron has only a large, fairly broad and nearly twice as long as broad, reddish testaceous discal spot extending usually from near the level of the humeral callus to as far as two-thirds of the length of elytron (**vittata** var. n.). In others the elongate discal spot is absent while the apical one-third is reddish-testaceous

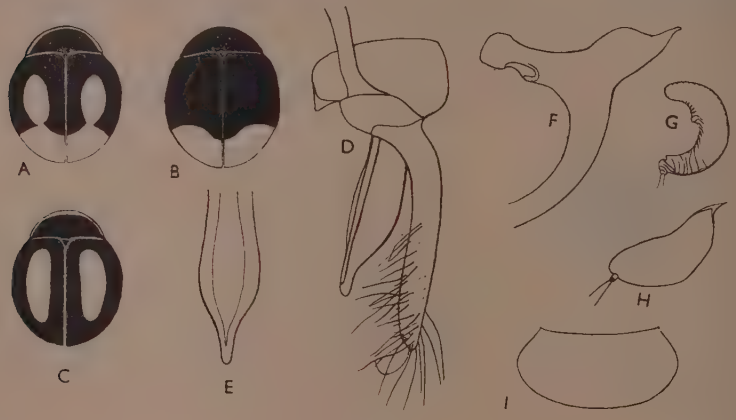

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Fig. 12.—A—*Cryptogonus complexus* sp. n.; B—var. *posticus* var. n.; C—var. *vittatus* var. n.; D—male genitalia (side view); E—penis (front view); F—siphonal capsule; G—spermatheca; H—IX sternite; I—X tergite.

with the basal black area meeting it and being convex near the sutural and concave towards the external margins (**posticus** var. n.). Underside more or less deeply reddish testaceous except the meso- and metasternum and in some instances the elytral epipleurae which are deep castaneous to piceous. Legs reddish brown with the external margins of the femora as well as tibiae and tarsi testaceous.

Head finely and sparsely punctate in males and closely so in females; pubescence whitish yellow, short and rather sparse; clypeus completely concealing the labrum, mentum with a deep semicircular notch in the middle of the anterior margin. Pronotum with the lateral margins narrow, straight and with the posterior angles pointed. Pronotum, scutellum and elytra with fine and close punctation and yellowish, moderately long and dense pubescence. Underside moderately finely punctate except the very coarsely punctate lateral parts of metasternum, abdominal sternites and femora of the first pair of legs; pubescence golden, moderately long, rather sparse and subdepressed. Prosternum subtriangular with a fairly broad prosternal process, the ventral surface flat, prosternal carinae

close to each other, much narrower than the width of prosternal process (fig. 2E), subparallel in the basal half and gradually widening in the anterior half before meeting each other in an arch at the anterior margin. Mesosternum broad and widely emarginate anteriorly. The first abdominal sternite longest, second to fourth short, subequal in the middle, the last not being emarginate posteriorly in the males. Of the male genitalia, sipho strongly curved, very narrowly tubular, with the outer branch of the capsule a little shorter than the inner one; penis elongate, widely rounded, broadest in the apical two-thirds and acutely curved and narrowing to a pointed apex in the apical one-third; in lateral view the latter part curves farther away from the side of paramera which are filiform, a little longer than penis and have very long, rather sparse setae in the apical half. Female with the tenth tergite moderately broad, ninth sternite rather oval but projected near the lateral part of the base; spermatheca semicircular, very slightly narrow at the ends, rather weakly chitinised.

Length: 2–2·25 mm.; *width*: 1·6–1·75 mm.

Type: A male in the British Museum; India: Assam, Patkai Mountains (*Doherty*).

Paratypes: Ten of both sexes in B.M.; seven with same data as type; one from Sikkim, Singhik, 5,000 ft., 24.iv.1924 (*R. W. G. Hingston*) and two from Burma: Mishmi Hills, Dingliang, 2,450 ft., 12.iii.1935. (*M. Steele.*)

5. The *deltoides* group.

This group is chiefly characterised by the prosternal carinae forming a triangle with its apex a little below the anterior margin and joining the latter as a single carina. The body is subrounded and more or less strongly convex, the lateral margins of pronotum straight and the anterior and posterior angles subrounded. Geographically it seems to spread over Malaya, Sumatra, Borneo and the Philippine Islands. The three species included in the group may be distinguished from one another by the following key.

Key to the species of the deltoides *group.*

Elytra entirely black; upper surface with fine, well-impressed and close punctation and moderately long, dense, and greyish pubescence; male genitalia with penis slightly shorter than paramera, and gradually narrowing from base to an almost pointed apex. (Loc. Philippine Islands) . . *tristis* (Weise)

Elytra black except in the apical one-fourth, which is testaceous or reddish-testaceous 2

2. Body more strongly convex, without a distinct humeral callus, elytra with the apical one-fourth testaceous, the latter in the two elytra together forming a broadly convex arc towards the base (fig. 13A); upper surface with rather fine, well-impressed and close punctation and long, moderately dense, greyish pubescence; male genitalia with penis half as long as paramera and spathulate in outline. (Loc. Borneo, Sumatra, Malaya) . . . . . **deltoides** sp. n.

Body less convex, with a distinct humeral callus ; elytra with the apical one-fourth reddish testaceous except along the suture where the black area gradually narrows towards the apex, the reddish testaceous area forming separately on each elytron a semicircular arc towards the scutellum ; upper surface with fine, less impressed and sparser punctation and long, dense, greyish pubescence ; male genitalia with penis a little shorter than paramera, subparellel except towards the apex which is produced forwards. (Loc. Borneo) . . **deltodirus** sp. n.

Cryptogonus deltoides sp. n. (fig. 13, A–D).

Body subrounded, strongly convex, without a distinct humeral callus. Head reddish-testaceous in males and slightly darker to dark brown in females ; eyes grey, antennae, anterior margin of clypeus and mouth-parts dark brown to piceous. Pronotum black with a brownish, narrow, anterior border and a testaceous, triangular spot at each of the anterior angles ; the base and sides of the spot are subequal and about half as long as the lateral margin of pronotum. The scutellum and elytra black, the latter with the apical one-fourth testaceous with the margin towards the basal black area in the shape of a broad arc. Underside piceous except the reddish to dark brown legs, elytral epipleurae and abdominal sternites.

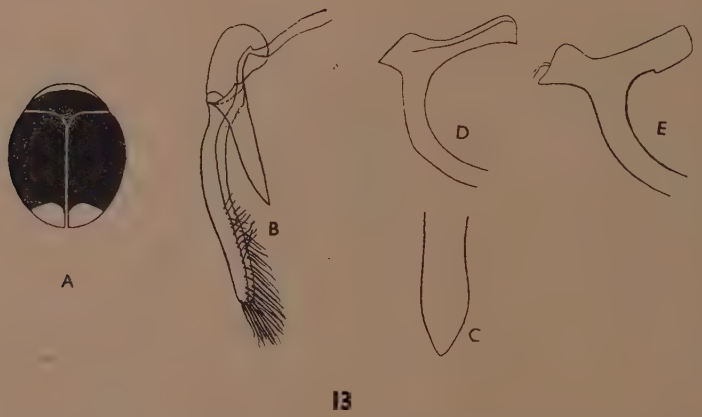

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Fig. 13.—A–D—*Cryptogonus deltoides* sp. n. : A—outline of the body ; B—male genitalia (side view) ; C—penis (front view) ; D—siphonal capsule ; E—siphonal capsule of *C. deltodirus* sp. n.

Head with fine, distinctly impressed and fairly close punctation and long, greyish and sparse pubescence ; clypeus widely emarginate anteriorly and only partly covering the labrum ; antennae with club-shaped flagellum ; the anterior margin of mentum with a broad, shallow and rather triangular emargination, and the ventral surface with fine and sparse punctation and pubescence. Pronotum with rather fine, well-impressed and close punctation and long, greyish, and moderately dense pubescence ; anterior and posterior angles rounded and the lateral margins rather straight. Scutellum with a few fine punctures and long grey hairs. Elytra with punctation and pubescence similar to that on pronotum. Underside with rather fine and moderately close punctation except towards the lateral and posterior margins of metasternum, on the abdominal sternites and femora of the first pair of legs, where the punctures are coarse, impressed and close together ; pubescence rather short,

sparse and yellowish. Prosternum obtriangular with the carinae forming a triangle with the base nearly as broad as the prosternal process. The first abdominal sternite longest, second to fourth short and subequal in the middle, fifth a little longer than the sixth which is nearly as long as the fourth and hardly emarginate in the middle of the posterior margin in males. Of the male genitalia, sipho very narrow and curved almost in a circle, siphonal capsule also very narrow except the outer branch which is short and stumpy, the inner being nearly four times as long as the outer one ; paramera long and narrow, nearly twice as long as the penis and with the distal half bearing long setae on the side facing the penis which is spatulate in front view and subtriangular in side view.

Length : 2·25–2·50 mm. ; *width* : 2–2·15 mm.

Type : Male, in the British Museum ; Borneo, Mt. Matang, West Sarawak ; February, 1914 (*G. E. Bryant*).

Paratypes : Four, both sexes ; one with the same data as the type ; one from Sumatra, Merong (*Doherty*) ; two from Malaya, Perak (*Doherty*). In the British Museum.

Cryptogonus deltodirus sp. n. (fig. 13E ; Pl. 1, fig. 6).

Very similar in general appearance and coloration to *C. deltoides* but slightly larger and less convex, with a rather distinct humeral callus. Head reddish testaceous in the male, with the eyes dark grey, the anterior margin of clypeus, the antennae and mouth-parts dark brown. Pronotum black with brownish, fairly broad anterior and lateral margins and a large subquadrate testaceous spot at each of the anterior angles. Scutellum and elytra black, the latter with the apical one-fourth reddish testaceous except along the suture where the black area, by gradually narrowing towards the apex, leaves on each elytron a semicircular reddish testaceous area with the top directed towards the scutellum. Underside reddish brown except the piceous meso- and metasternum and the middle of abdominal sternite.

Head with fine, impressed and moderately close punctation and long, greyish and sparse pubescence. Clypeus widely emarginate anteriorly and only partly covering the labrum ; antennae with the first segment subrounded, the second subtriangular with the angle on inner side cuspidate, bearing a long setae at the apex, the flagellum club-shaped with the terminal segment subequal to the preceding segment ; labrum three times as wide as long, mandibles with bifid apex and cuspidate basal tooth ; labium visible, subquadrate and fairly strongly chitinised ; mentum cordiform and triangularly emarginate anteriorly. Pronotum with fine, less impressed and less close punctation and with long, greyish and dense pubescence ; anterior and posterior angles rounded and the lateral margins straight. Scutellum with a few fine punctures and long, grey hairs. Elytra with punctation and pubescence as on the pronotum. Underside with fine, moderately close punctation except on the part towards the lateral margins of metasternum, on the abdominal sternites and the first pair of femora where the punctures are coarse ; pubescence rather short, sparse and yellowish. Prosternum and abdominal sternites as in *deltoides*. Male genitalia : sipho thin and curved as a semicircle, siphonal capsule for the most part expanded except for the narrow inner branch ; paramera narrow and long, bearing long setae in the apical half ; penis also long, only a little shorter than paramera, moderately broad, with the lateral margins subparallel for two-thirds their length and for the remaining one-third converging in a broad arc to a narrow, forwardly produced and subrounded apex ; in the lateral view the surface opposite the paramera curves away from them in the apical one-third.

Length : 2·57 mm. ; *width* : 2·15 mm.

Type : A male (partly dissected) in the British Museum ; Borneo, Martapura (*Doherty*).

Remarks: This species is close to *C. deltoides*, from which it may be distinguished by the less convex form of the body, finer and less impressed punctation of pronotum and elytra, the details in the coloration of pronotum and elytra, and above all by the structure of the male genitalia.

Cryptogonus tristis (Weise).

Aspidimerus tristis Weise, 1910 : 231. Korschefsky, 1931 : 173.

Body subrounded, convex. In male, head yellowish testaceous in front, eyes greyish, antennae testaceous, anterior margin of clypeus and mouth-parts dark brown. Pronotum black except the anterior margin, which has a narrow reddish brown border, and the lateral margins, on each of which is a subtriangular testaceous spot occupying the anterior three-fourths of the length of the margin. Scutellum and elytra entirely black. Underside black or piceous except the piceous red abdominal sternites and the proximal parts of femora which, however, in the first pair are testaceous along the anterior margin.

Head with fine and sparse punctation and short, yellowish pubescence; clypeus slightly emarginate anteriorly, covering the labrum completely; antennae with a club-shaped flagellum; labium subquadrate, rather strongly chitinised and showing through the triangular emargination in the middle of the anterior margin of mentum which is finely and sparsely punctate. Pronotum with fine, well-impressed and close punctation and moderately long, dense and greyish pubescence; lateral margin nearly straight with the anterior and posterior angles hardly rounded. Scutellum with a few fine punctures and short hairs. Elytra with punctation and pubescence as on pronotum, except that the former is slightly less fine and more crowded. Underside with fine and moderately close punctation except on the lateral parts of metasternum, on abdominal sternites and the first pair of femora. Prosternum obtriangular, the carinae forming a triangle with the base narrower than the width of prosternal process. The abdominal sternites as in *deltoides* except for the last which is not at all emarginate posteriorly in the male. Male genitalia: sipho thin and strongly curved almost in a circle, siphonal capsule not expanded, with the outer branch quadrate and short and the inner narrow, nearly twice as long as the outer; penis gradually narrowing from the base to an almost pointed apex, paramera slightly longer than penis, pointed towards the apex and bearing a number of long setae in the apical half.

Length: 2·3 mm.; *width*: 1·85 mm.

Geographical distribution: Philippine Islands. The type locality is Luzon, Manila. The single example before me is also from the Philippine Islands (*Sempler*).

Remarks: It is with some doubt thst the above example has been identified as *C. tristis* (Weise). It differs from Weise's description in the coloration of the lateral margins of the pronotum, which are stated to be piceous-red in his description and are yellowish testaceous in the (male) example studied here. It is possible that Weise's example was a female and that this difference, as is common in many other species of the genus, is sexual. As the type, deposited in Manila, P.I., would not easily be available, the point cannot at present be decided. Unfortunately, contrary to his earlier practice, Weise did not describe the genitalia of this species, nor did he give enough details of the external characters. As he distinguished between *Cryptogonus* and *Aspidimerus* exclusively on the character of the male genitalia, it is possible that he was led by the form of the body (which is very similar to that of the other species of

the latter genus) to include it in *Aspidimerus*. Recently (*vide* Le Pelley, 1943), *Aspidimerus tristis* Weise was recorded as predacious upon *Pseudococcus lilacinus* Cockerell (COCCIDAE) in the Philippines, but an examination of the specimen collected by Mr. Le Pelley in the British Museum shows that the Coccinellid concerned was misidentified and is not a member of this tribe but belongs to Scymnini.

6. The *bilineatus* group.

This group, which includes one species from South India and one from Ceylon, is chiefly characterised by the prosternal carinae being subparallel for the basal two-thirds of their length and acutely arched for the remaining one-third and meeting each other a little below the anterior margin and joining the latter as a single carina. Body subrounded and less convex, with the upper surface finely punctate and densely pubescent with long greyish hairs. The lateral margins of pronotum and the anterior and posterior angles are subrounded. The underside is less coarsely punctate than in other species.

Cryptogonus bilineatus sp. n. (fig. 14A–C).

Body subrounded and moderately convex. In male, head testaceous in front with a quadrate black spot in the centre of the interocular space, eyes dark grey, anterior margin of clypeus, antennae and mouth-parts dark brown. Pronotum black except the anterior margin which has a narrow brown border and the lateral margins, each of which has a large subtriangular testaceous spot which occupies its entire length except near the base. Scutellum and elytra black, the latter each with a testaceous, longitudinal stripe commencing from the level of the humeral callus, between the latter and the suture, and reaching the extreme apex of the elytron ; it is wide and subrounded towards the base, narrow in the middle and towards the apex. Underside piceous except the antero-lateral margins of prothoracic epipleurae and of the first pair of femora.

Head with fine, impressed and moderately sparse punctation and moderately long, sparse and greyish pubescence ; clypeus slightly emarginate anteriorly and covering the labrum completely ; antennae with the first segment subrounded and the flagellum club-shaped ; labium quadrate, fairly strongly chitinised and not covered by the mentum which is triangularly emarginate anteriorly. Pronotum with fine, impressed and close punctation and long, fairly dense, greyish pubescence ; the anterior and posterior angles and the lateral margins subrounded. Scutellum with a few minute punctures and greyish hairs. Elytra with punctation and pubescence similar to that on pronotum. Underside with fine punctation except on the lateral parts of metasternum and to a certain extent on the first two abdominal sternites ; pubescence rather short, sparse and yellowish grey. Prosternum obtriangular with a fairly wide process and with the carinae slightly narrower than the width of the process, subparallel for two-thirds their length, convergent in the remaining one-third and meeting each other a little distance below the anterior margin of prosternum which is, however, connected with them by a short, single ridge. Of the abdominal sternites, first longest, second to fourth subequal and short, fifth and sixth slightly longer than the preceding three, the sixth in the male being emarginate posteriorly in the middle. Male genitalia differ from those of other known species in having the paramera shorter than the penis, which is nearly one-third longer and is moderately narrow and subrounded at the apex ; paramera with a few short hairs at the apex, sipho narrowly tubular and strongly curved with the inner branch much longer and narrower than the outer one.

Length : 2·5 mm. ; *width* : 1·7 mm.

Type : Male, in the British Museum ; SOUTH INDIA, Trichnopoly, Puliyar (*Bowring*).

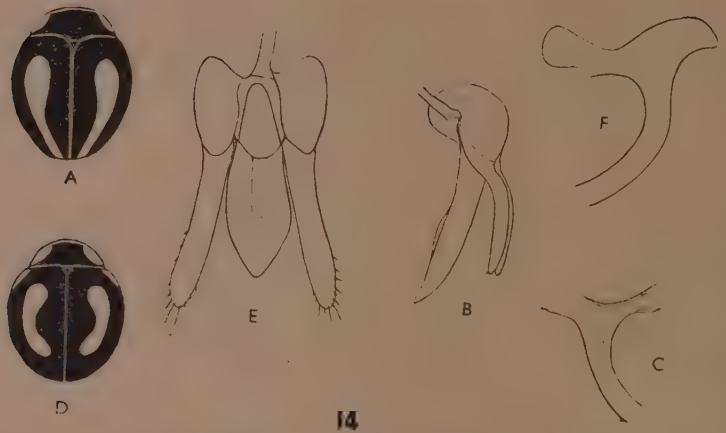

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Fig. 14. - A–C—*Cryptogonus bilineatus* sp. n. : A—outline of the body ; B—male genitalia (side view) ; C—siphonal capsule ; D–F—*C. bryanti* sp. n. ; D—outline of the body ; E—male genitalia (front view) ; F—siphonal capsule.

Cryptogonus bryanti sp. n. (fig. 14D–F).

Body subrounded, moderately convex. In male, head pale brown in front, eyes grey, anterior margin of clypeus, antennae and mouth-parts brown. Pronotum piceous black, except the anterior margin, which has a narrow, reddish brown border in the middle, and the lateral margins each of which has a large pale, testaceous, subtriangular spot spreading over the entire lateral margin and over an equally wide part of the anterior margin. Scutellum and elytra piceous black, the latter each with an oblong testaceous spot at the humeral angle and a reddish testaceous, longitudinal stripe which commences from the level of the humeral callus and runs between the latter and the suture and terminates at three-fourths the length of elytron. The stripe is rounded and fairly broad at either end and narrow in the middle, being emarginate on the side towards the suture. Underside more or less dark brown with a slight shade of red.

Head with fine, impressed and moderately sparse punctation and short, sparse, greyish pubescence ; clypeus slightly emarginate and not covering the labrum which is about three times as wide as long ; antennae with the first segment subrounded, comparatively smaller than in many other species, and the flagellum club-shaped with the terminal segment small and conical ; mentum cordiform, with a small semicircular notch in the middle of the anterior margin, ventral surface rather coarsely punctate. Pronotum with fine, fairly impressed and close punctation and long, fairly dense greyish pubescence ; the anterior and posterior angles and lateral margins subrounded. Scutellum with a few minute punctures and greyish hair. Elytra with fine and close but less impressed punctation and with pubescence similar to that on pronotum. Underside finely and moderately sparsely punctate except on the lateral parts of metasternum, and the second to fifth abdominal sternites, where the punctures are rather coarse and fairly close. Prosternal carinae, etc., of same shape as in *bilineatus*. The first abdominal sternite longest, the rest smaller and subequal with the last one in the male, emarginate posteriorly in the middle. Male genitalia : sipho very narrow and tubular, strongly curved proximally and with the inner branch of the capsule much longer and a little narrower than the outer one ; penis shorter, nearly three-fourths as long as paramera, gradually widening from the base to a little beyond the middle and converging to a narrow subrounded apex ; paramera filiform and with a few long setae towards the apex.

Length : 2·0 mm. ; ***width*** : 1·7 mm.

Type : A male in the British Museum : CEYLON, Kandy, —.vi.1908 (*G. E. Bryant*).

Remarks : This species is near *C. bilineatus* from South India, on account of its general form, punctation, pubescence and the structure of the carinae, but differs from it in several respects and may be easily distinguished by its smaller size, coloration, structure of mentum and of male genitalia. It is named after Mr. G. E. Bryant.

Pseudaspidimerus gen. n.

Aspidimerus Weise (nec Mulsant, 1850), 1900 : 426. Mader, 1926 : 16.

Weise (1900) transferred *Platynaspis circumflexa* Motschulsky from Platynaspini to Aspidimerini and distinguished it and the allied species from those of *Cryptogonus* by the structure of the male genitalia. He provisionally placed them in *Aspidimerus*, stating that should they not prove congeneric with its genotype, *Aspidimerus spencii* Mulsant (which he was unable to examine), a new generic name should be proposed for them. On examining the genotype it has been found that *circumflexa* is not congeneric with it. Consequently a new generic name **Pseudaspidimerus** is proposed. Although Weise gave the structure of the male genitalia as the chief distinguishing character for separating *circumflexa* and the allied species, it has been possible in the present study to correlate these characters with the structure of the prosternum and the general appearance of the body and its other external characters, which may be briefly described as follows.

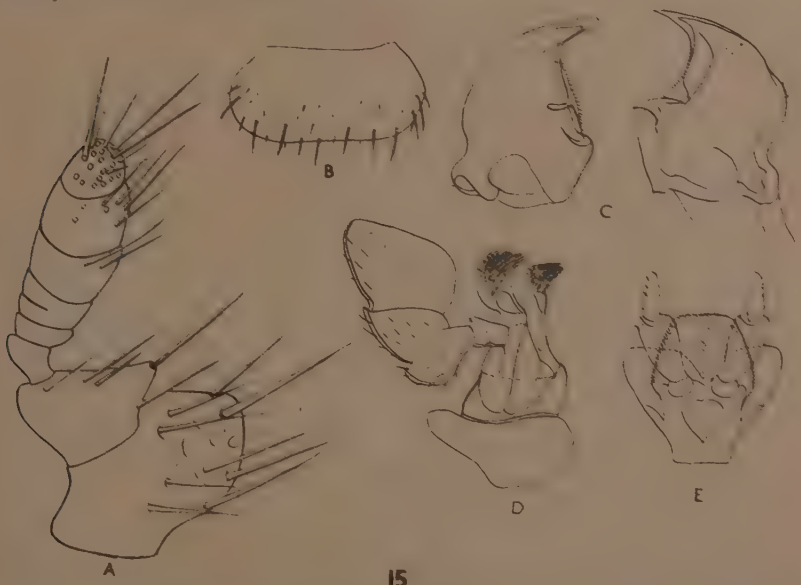

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FIG. 15.—*Pseudaspidimerus circumflexa* var. *testaceus* (Ws.) : A—antenna ; B—labrum C—mandibles ; D—maxilla ; E—labium.

Referable to the tribe Aspidimerini. Body usually 2-2·5 mm. long, rounded-oval, convex, upper surface moderately finely punctate, and rather densely pubescent. Clypeus partially covering the labrum, antennae (fig. 15A) nine-segmented, geniculate, with the first segment transverse-oval, very large and almost concealing the second segment which is smaller and subtriangular; the remaining seven segments, which together form a club-shaped flagellum, are usually distinct but in some specimens the fourth and fifth segments are partially fused; the terminal segment of the flagellum conical and only a little smaller than the preceding segment. Labrum nearly twice as wide as long, with the anterior angles rounded; mandible with a bifid apex and a subcuspidate basal tooth; maxillae compact as in other genera; mentum subcordiform, with a distinct, wide, triangular emargination in the middle of the anterior margin, surface moderately finely punctate; labium visible through the triangular emargination of the mentum. Pronotum with the lateral margins narrow, straight or slightly curved externally and with the posterior angles subrounded; elytra rounded, apex broadly curved and not pointed, punctation and pubescence differing in various species. The middle or visible part of prosternum with the carinae well developed, subparallel, as wide apart as the prosternal process at the base and extending from the latter to the anterior margin where they are connected with each other by a transverse ridge, thus enclosing an oblong rectangular area which projects ventrally, being at a different level from the part of the prosternum on either side of it; prosternum triangular but, when its external anterior angles are covered by the expanded trochanters in the normal state of repose, it appears quadrangular in outline; the entire surface uniformly and rather finely punctate and with thin, fairly long pubescence. Mesosternum small, transverse and widely emarginate anteriorly; metasternum more coarsely punctate towards the lateral margins and rather finely so in the median part; elytral epipleurae wider in the middle and gradually narrowing towards either end, and shallowly channelled and finely punctate. The first abdominal sternite longest, second to sixth short, subequal in the middle with the last one in the male distinctly and fairly widely emarginate in the middle of the posterior margin. Male genitalia: sipho (fig. 16F) swollen (sometimes into a bulb) proximally, slightly bent before the middle and continued distally as a wide, straight tube with a membranous extrusible structure at the orifice; penis broadly developed, nearly as long as wide at the base; paramera filiform, with a few sensory setae at the apex and usually as long as the penis (Pl. 1, figs. 7–10). Female genitalia not very distinct from species to species. In the type species the spermatheca has a broad cornu, and a narrow nodulus; ninth sternites are subquadrate in outline; tenth tergite much narrower than the total width of the pair of sternites.

Genotype: *Platynaspis circumflexa* Motschulsky.

Geographical distribution: Ceylon, India, Burma, Siam, Java, Philippines.

Remarks: The genus is easily distinguished from others of the tribe by the structure of the prosternum and its carinae, the shape of the antennae and of the mentum, and by the structure of the male and female genitalia. The species appear to feed mostly on aphids, as far as can be inferred from the labels on the specimens examined; it would be worth while to ascertain, by further field observations, whether this preference for aphids is characteristic of all the species.

Key to the species and varieties of Pseudaspidimerus.

1. Ground-colour of elytra black, with yellowish to reddish brown border, patches or spots 2
   Ground-colour of elytra testaceous, or dark brown, with or without black markings . . . . . .

2. Elytron moderately shining, black, with a yellowish, rounded discal spot, about one-third as wide as elytron and situated in the middle of it, slightly nearer the suture than the lateral margin; body distinctly convex, subhemispherical, penis broad for two-thirds its length, emarginate laterally in the apical one-third and narrowing to form a moderately pointed apex in the middle. (Loc. Ceylon) . . . . . **uttami** sp. n.

Elytron black, without discal spots, with reddish brown or brownish external border or spots, body convex but not subhemispherical 3

3. Elytra black with usually one-eighth of the apex reddish brown: punctation moderately fine, close and impressed; pubescence greyish, moderately long and dense; penis broad in the basal half, gradually narrowing in the apical half to form a conical apex (Pl. 1, fig. 9) (Loc. Ceylon) . . . *flaviceps* (Walker)

Elytra black, either with the apical half reddish brown and with a large sutural black spot before the apex, or with at least the external border testaceous 4

4. Elytra black in the basal half, reddish brown in the apical, the meeting line widely undulating; the apical half with a large transverse-oval, black sutural spot situated a little before the apex and connected with the basal black area by a black streak along the sutural margin (fig. 16C, D); punctation on elytra rather coarse and close, pubescence yellowish grey, short and sparse; penis broad at the base, narrowing slightly from it in a rounded arc towards the apex which is weakly emarginate in the middle. (Loc. Java) . . . . **mauliki** sp. n.

Elytra black with the external border from the shoulders to apex testaceous or reddish brown, in addition sometimes the narrow basal and sutural borders also becoming paler . . . 5

5. Elytra black with the external border from the shoulder to apex testaceous, the border near the shoulder as broad as the distance between the external margin and the humeral callus and slightly widening towards the apex; male genitalia as in *mauliki*. (Loc. Siam) . . *mauliki* var. **siamensis** var. n.

Elytra black with the external borders testaceous, usually indistinct, sometimes in addition the basal and sutural margins with narrow, pale testaceous or brown borders; male genitalia as in *flaviceps*. (Loc. Ceylon) . *flaviceps* var. **limbatus** var. n.

6. Elytra testaceous, each with a discal, subrounded, black spot and in addition with either a sutural black spot or a black sutural border 7

Elytra entirely testaceous or moderately dark brown; upper surface entirely without black spots; form, punctation, pubescence and structure of male genitalia as in *circumflexa*. (Ceylon, India) . . . . *circumflexa* var. *testaceus* (Weise)

7. Body 2·5–2·75 mm. long, not shining ; pronotum testaceous with a broad, semicircular black spot occupying the median half of the base ; elytra with a sutural, usually oblong-oval, sometimes rounded or elongate black spot in the basal one-third of the length ; in addition, there is, on each elytron, a subrounded discal spot in the middle of the length but slightly nearer the suture than the lateral margin ; punctation moderately fine and fairly close ; pubescence greyish, fairly long and dense ; penis as broad as long, slightly narrow near the apex with the lateral margins subrounded and the median part broadly sinuate. (Loc. Ceylon, Burma)

circumflexa (Motschulsky)

Body 2·0 mm. long, moderately shining ; pronotum black except the lateral margins which are testaceous ; elytron testaceous, with a sutural, black border commencing from the base and narrowing gradually towards the apex ; in addition there is on each elytron a large, discal black spot which is sometimes confluent with the sutural border ; pubescence greyish, short and fairly dense. (Loc. Java) . . . . . *pulcher* (Weise)

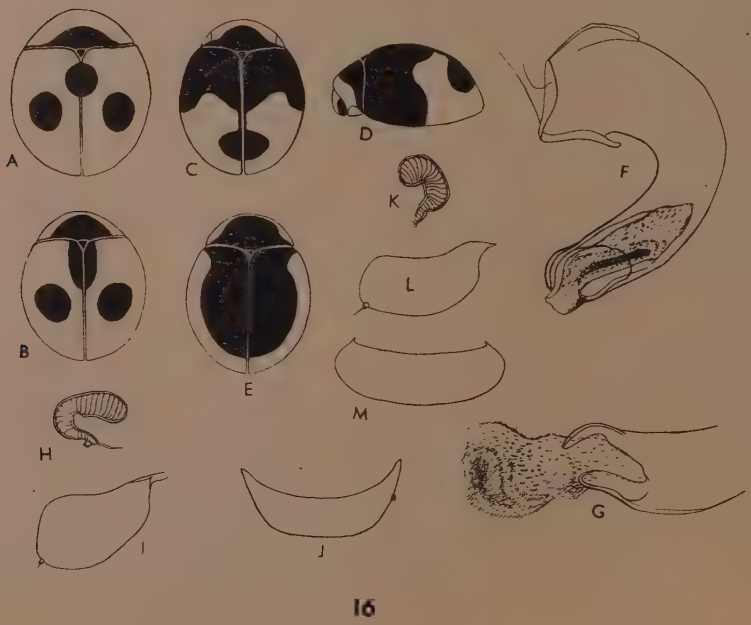

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Fig. 16.—A, B and F–J—*Pseudaspidimerus circumflexa* (Mots.). A and B—outline ; F—siphonal capsule ; G—the distal part of the same evaginated ; H—spermatheca ; I—IX sternite ; J—X tergite ; C and D—outline of *P. mauliki* ; E—the same of var. *siamensis* var. n. ; K–M—*P. flaviceps* (Walker) ; K—spermatheca ; L—IX sternite ; M—X tergite.

Pseudaspidimerus circumflexa (Motschulsky) (Pl. 1, fig. 7 ; text figs. 1A, C, D ; 15 ; 16A, B, F–J).

Platynaspis circumflexa Motschulsky, 1858 : 118. Crotch, 1874 : 199.
Aspidimerus circumflexa (Motschulsky), Weise, 1900 : 423. Korschefsky, 1931 : 172.

Body subrounded, convex. Front of head yellowish testaceous in male and reddish testaceous in female ; eyes black or grey ; clypeus, antennae and mouth-parts brown. Pronotum testaceous with the antero-lateral angles yellowish testaceous and a large, semicircular, black spot occupying the middle half of the basal margin and extending forward usually a little beyond the centre of pronotum. Scutellum black. Elytra testaceous with an oblong-oval, sutural spot in the basal one-third of the suture and on each elytron an oblong to subrounded discal spot in the middle of the length but slightly nearer the sutural than the lateral margin. Underside testaceous except the thoracic sternites and the median part of the first four abdominal sternites which are black to fuscous.

Head finely and sparsely punctulate in male and comparatively coarsely and closely punctate in female ; pubescence greyish, short and sparse in both sexes. Clypeus narrower and weakly emarginate anteriorly and usually not covering the labrum excepting its base. Antennae and mouth-parts as described for the genus, the former with all the segments distinct. Pronotum moderately finely to rather coarsely and closely punctate and with greyish, fairly long and dense pubescence ; the lateral margins narrow, straight and the anterior and posterior angles not pointed but subrounded. Elytra with punctation and pubescence similar to that of pronotum. Underside moderately finely and rather sparsely punctate excepting the metasternum and the abdominal sternites where the punctures are distinctly coarse and close, more so towards the lateral parts of the former. The last abdominal sternite in male fairly deeply emarginate posteriorly. Male genitalia : siphonal capsule, though swollen, not forming a bulb, penis nearly as broad as long with the lateral margins slightly curved, the antero-lateral angles evenly rounded and the anterior margin very weakly and broadly emarginate in the middle ; paramera filiform, slightly bent before the middle and with a few moderately long setae at the apex. Female genitalia with the spermatheca strongly bent in the middle ; ninth sternites quadrate, tenth tergite transverse, narrow from the base towards the anterior margin which is subrounded laterally.

Length : 2·5–2·75 mm.; *width* : 1·75–2·1 mm.

Geographical distribution : Type locality Ceylon ; Weise also reports this species from Ceylon. The examples studied here are from :

Ceylon : Colombo, at coastal level, 7–27.iv.1882 (*G. Lewis*).

India : Assam, Patkai Mountains (*Doherty*).

Burma : Myitkyina, 30.viii—1.ix.1914, on orange (*T. B. Fletcher*).

Remarks : In the two Burmese specimens received from the Entomologist, New Delhi, India, the sutural black spot is much reduced and lies away from the base. Weise noted two varieties of this species : one without any black spots whatsoever (var. *testaceus*) and the other (not given a separate varietal name) with the sutural black spot much enlarged and confluent with the discal spot on each elytron. Data regarding the examples of the former are given below, but no example of the latter has been seen by the author.

Pseudaspidimerus circumflexa var. *testaceus* (Weise).

Aspidimerus circumflexa var. *testaceus* Weise, 1900: 423. Korschefsky, 1931: 172.

Similar to *circumflexa* in structure, but differing in the colour-pattern. The dorsal surface without black spots; pubescence yellowish-grey; underside reddish-testaceous to fuscous in the parts which are black in *circumflexa*, the rest of the underside and legs pale testaceous.

Geographical distribution: Type locality CEYLON. The examples examined are from the following localities :—

CEYLON: Halupahani, Haldummulle.

INDIA: Coimbatore (Madras Province), feeding on *Aphis nerri*, 26.vi.1928 (*M. S. K.*); Nilghiri Hills (*A. K. W. Downing*); Malabar (S. India) (*Fry bequest*); Pusa (Bihar Province), near roots of pomegranate, 28.viii.1909 (*C. S. M.*); Pusa, 9.ix.1914 (eating maize aphis; Nagpur Central Province), —.xi.1914 (*C. S. Misra*).

Remarks: This variety appears to be fairly widespread and common.

Pseudaspidimerus uttami sp. n.

Body subrounded, strongly convex and small. In male, head fulvous in front, eyes black, antennae, anterior margin of clypeus, and mouth-parts with the exception of cardo and mentum brown; the two last piceous like the rest of the underside of head. Pronotum black, except the anterior margin, with a narrow, reddish brown border and the lateral margins each with a fulvous triangular spot narrowing posteriorly and almost touching the base of pronotum. Elytra moderately shining, black, each with a discal subrounded, fulvous spot about one-third as wide as the elytron and situated in the middle of its length, but slightly nearer the suture than the lateral margin. Underside piceous to black excepting the legs and the fulvous antero-lateral part of prothorax. The first pair of legs with the trochanter and femora chestnut-brown except along the anterior margin of the latter which is yellowish testaceous, the remaining parts pale brown; the second and third pairs of legs like the first without yellowish testaceous border on the femora.

Head finely and sparsely punctate and with short, sparse and yellowish pubescence; clypeus narrow at the anterior margin which is subrounded laterally, widely emarginate in the middle anteriorly, and only partially covers the labrum; antennae with the first segment broadly rounded, the second subtriangular and the flagellum club-shaped; mentum with a moderately wide, triangular notch in the middle of the anterior margin, moderately coarsely punctate on the ventral surface. Pronotum with fine, rather sparse punctation and with long, dense, yellowish grey pubescence; lateral margins straight and the anterior and posterior angles subrounded. Scutellum and elytra with punctation and pubescence similar to that on pronotum. Underside finely and moderately closely punctate except towards the lateral parts of metasternum and on the abdominal sternites, the last of which is, in the male, fairly widely and deeply emarginate in the middle of the posterior margin. Of the male genitalia, penis (Pl.1, fig. 8) nearly as long as broad at the base, subparallel in the basal half, broadly rounded near the middle and gradually tapering apically to form a narrow and pointed apex; paramera filiform, bent near the base and having a few, short, sensory setae at the apex.

Length: 1·8 mm.; *width*: 1·5 mm.

Type: A male in the British Museum; CEYLON, Galle, on coastal level, 27.xi.—4.xii.1881 (*G. Lewis*).

Remarks : Within the genus *Pseudaspidimerus*, this species can be easily distinguished by its distinctive colour-pattern, which is, however, deceptively similar to the smaller examples of *Cryptogonus orbiculus* (Gyllenhal). Besides the differences in the structure of prosternum and male genitalia, which are very different in the two species (see characters of genera), the narrower anterior margin of clypeus, very fine punctation, long and dense pubescence of the upper surface, the testaceous border and the finer punctation of first pair of femora in *uttami*, are some of the external characters by which it may be separated from *orbiculus*.

Pseudaspidimerus pulcher (Weise).

Aspidimerus pulcher Weise, 1908 : 306. Korschefsky, 1931 : 173.

It has not been possible to examine an example of this species during the present study, but as it is congeneric with *P. circumflexa* (Motschulsky), according to Weise, it is here transferred to *Pseudaspidimerus*. Contrary to his earlier practice, Weise did not describe its male genitalia which would have helped to determine its correct position ; the other characters mentioned by Weise have been included in the key to the species of the genus (page 120).

Length : 2·0 mm.

Geographical distribution : Java : Tengger Hills.

Pseudaspidimerus flaviceps (Walker).

Coccinella flaviceps Walker, 1859 : 219.
Scymnus flaviceps (Walker), Gemminger and Harold, 1876 : 3793. Korschefsky, 1931 : 142.
Aspidimerus horni Weise, 1900 : 424. Korschefsky, 1931 : 172.

Body subrounded, strongly convex. Front of the head yellowish testaceous in males and testaceous in females ; eyes black ; antennae and the anterior margin of clypeus brown and the mouth-parts dark brown. Pronotum black, excepting the anterior margin which is reddish brown and the lateral margins, each of which has a triangular yellowish testaceous spot which narrows towards the base. Elytra black except the apical one-eighth reddish brown. Underside piceous to black in the centre and dark brown towards the external margins, except towards the apex where the last three abdominal sternites are testaceous ; legs testaceous excepting the trochanter and femora of the first pair.

Head finely and sparsely punctate in male and rather coarsely and closely punctate in female ; pubescence greyish, fairly short and sparse in both sexes. Clypeus narrower and weakly emarginate anteriorly, completely or partly covering the labrum. Antennae with the first segment transverse-oval, second subtriangular and pointed towards the inner side, flagellum club-shaped with the fifth and sixth segments sometimes partially fused ; mentum with a small triangular notch in the middle of the anterior margin. Pronotum with moderately fine, close and well-impressed punctation and greyish, moderately long and fairly dense pubescence. Scutellum with a few fine punctures and grey hairs. Elytral punctation and pubescence similar to that of pronotum. Underside finely and fairly closely punctate except towards the lateral parts of metasternum and the abdominal sternites ; the pubescence yellowish-grey, short and moderately dense. The emargination in the posterior margin of the sixth sternite of the male is wide and not very deep. Male genitalia with the sipho swollen into a bulb proximally, penis broad and subparallel in the basal half and gradually narrowing in the apical half to form a conical apex (Pl. 1, fig. 9). In female (fig. 16K-M, the spermatheca moderately bent in the middle, and the tenth tergite with the lateral margins subrounded.

Length : 2·25–2·40 mm. ; *width* : 1·75–2·0 mm.

Type : In the British Museum.

Geographical distribution : Type locality CEYLON, Harrowapatham.

Other examples studied are from the following localities :—

CEYLON : Walligama, Gangaroowa, 31.x.1916, feeding on the cocoa aphis (*J. C. Hutson*) ; Peradeniya, 21.ii.1914 (*A. Rutherford*) ; Kandy, —.vi.1908 (*G. E. Bryant*).

Remarks : Weise (1900) was unaware of Walker's *flaviceps* (which was erroneously placed in *Scymnus* by Gemminger and Harold (1876) and consequently also by Korschefsky (1931)) when he described *Aspidimerus horni*, which agrees by description with Walker's type of *flaviceps* in the British Museum. The two may, therefore, be treated as synonymous.

Pseudaspidimerus flaviceps var. **limbatus** var. n.

Differs from the typical form in coloration. Head pale testaceous in front ; eyes black ; anterior margin of clypeus, antennae, and mouth-parts light brown. Pronotum pale testaceous to light brown except near the median part of the basal margin which is black with indistinctly marked fuscous boundary. In one example this black patch is broadly V-shaped and in the other semicircular. Elytra black with fairly broad, external border usually indistinctly marked pale testaceous to brown. In addition sometimes the basal and sutural margins have very narrowly marked, pale testaceous or brown borders, thus leaving on each elytron a very large discal black spot.

Type and one *paratype* : CEYLON, Peradeniya, 21.ii.1914 (*A. Rutherford*).

Pseudaspidimerus mauliki sp. n. (fig. 16 C, D).

Body subrounded and convex. In male, head fulvous in front, eyes dark grey ; antennae, anterior margin of clypeus and mouth-parts brown to reddish brown. Pronotum black except the anterior and lateral margins which are bordered broadly with reddish brown ; the antero-lateral angles each with a triangular yellowish testaceous spot narrowing posteriorly and terminating a little before the black border at the base. Scutellum black. Elytra black in the basal half, reddish brown in the apical half excepting a large, transverse-oval, sutural, black spot situated a little before the apex and connected by a black, sutural streak with the basal black area which has the apical margin widely undulating, being concave in the middle one-third of the width and convex for the same width on either side towards sutural and lateral margins. Underside black excepting the reddish brown to testaceous legs.

Head with moderately fine and close punctation and with yellowish grey, short and moderately sparse pubescence ; clypeus not quite so narrow at the anterior margin which is subrounded laterally and weakly emarginate anteriorly ; antennae with the first segment transverse-oval and the flagellum club-shaped ; mentum with a moderately broad and triangular emargination in the middle of the anterior margin, moderately finely and sparsely punctate on the central surface. Pronotum with rather coarse and close punctation and yellowish grey, short and moderately sparse pubescence ; the lateral margins slightly and the anterior and posterior angles moderately rounded. Scutellum with a few minute punctures and short hairs. Elytral punctation and pubescence similar to that of pronotum.

Underside with fine to moderately coarse punctation except towards the lateral margins of the metasternum and on the abdominal sternites, the last of which, in the male, is strongly emarginate posteriorly in the middle. Male genitalia with penis fairly broad, gradually narrowing, in an arc, from the base towards the fairly broad and rounded apex which is, however, weakly emarginate in the middle (Pl. 1, fig. 10).

Length : 2·35 mm. ; *width* : 1·85 mm.

Type : A male in the British Museum : Java (*Bowring*).

Remarks : This species is distinct from all other known species of the genus by its colour-pattern, punctation, pubescence, and the structure of male genitalia.

Pseudaspidimerus mauliki var. **siamensis** var. n. (fig. 16 E).

Agrees with the typical form in shape, punctation, pubescence, structure of male genitalia, etc., but differs in the colour-pattern of elytra, which are black except the testaceous external border from the shoulder to apex ; near the base the border is as broad as the distance between the external margin and the humeral callus but towards the middle and the apex it gradually widens, so that the apical one-third of elytra is completely testaceous.

Length : 2·3 mm. ; *width* : 1·8 mm.

Type : A male in the British Museum : Siam, 1930. (*W. R. S. Ladell*).

Acarinus gen. n.

Referable to the tribe Aspidimerini. Body small, rounded-oval, subhemispherical, usually larger in the female than in the male, with the apex of abdomen usually protruding beyond the elytra. Clypeus slightly emarginate at the anterior border through which part of labrum is always visible ; antennae with nine distinct segments, the first broadly oval, second subtriangular and moderately acuminate on the inner side, the remaining seven forming a fusiform flagellum with the apical segment moderately long, and acutely conical ; mentum subcordiform with a moderately deep, quadrate emargination in the middle of the anterior margin which is slightly inclined on either side towards the middle ; labium distinctly visible in the middle. Pronotum distinctly narrow laterally with the anterior and posterior angles and the lateral margins subrounded ; elytra subrounded, each with a rather indistinct humeral callus and with the epipleurae moderately wide, narrowing slightly posteriorly and shallowly channelled. Prosternum subtriangular with a fairly broad prosternal process ; surface flat and devoid of any trace of carinae, moderately closely punctate and rather sparsely pubescent. Mesosternum comparatively well developed, and only very weakly emarginate anteriorly, with punctation and pubescence as on prosternum. The first abdominal sternite longest, second to fourth short, subequal in the middle, fifth and sixth slightly longer and subequal, the latter not being emarginate posteriorly in the male. Male genitalia with very narrow and tubular sipho, curved almost in a circle ; siphonal capsule with the inner branch longer than the outer one, penis narrow, rounded at apex ; paramera slightly longer, tapering towards the apex which is beset with a small number of moderately long setae. Female with the tenth tergite moderately broad, slightly narrow posteriorly ; ninth sternite transverse-oval for the most part towards the middle of the segment and slightly drawn-out on the lateral part and with long setae along the posterior margin ; spermatheca weakly chitinised, and spherical in shape.

Genotype : *Acarinus philippinensis* sp.n.

Geographical distribution : The Philippine Islands.

Remarks : This genus is easily recognised by the absence of prosternal carinae, by the structure of the antennae, the last segment of which is moderately long and acutely conical, and by the genitalia, particularly of the female.

Acarinus philippinensis sp. n. (fig. 17).

Body small, 2–2·50 mm. long, rounded-oval, subhemispherical, larger in females than in males, elytra usually shorter and not completely covering the abdomen, the last two tergites of which are visible and are strongly sclerotised. Head yellowish testaceous in front with usually a brownish subquadrate spot in the centre in the male and piceous black in the female ; eyes greyish ; the anterior margins of clypeus and labrum, the antennae and labial palpi pale testaceous and the rest of mouth-parts more or less piceous black. Pronotum moderately shining black, except the narrow anterior margin which is brown and the lateral margins, each with a large subcircular yellowish testaceous spot covering the entire margin short of the narrow basal area. Elytra black to piceous black, each with a large, subcircular, yellowish testaceous discal spot, nearly half as wide as elytron, situated in the middle of its length and slightly nearer the suture than the external margin. Underside piceous black except the castaneous external margins of abdominal sternites and the yellowish testaceous epipleurae of prothorax, the apices of femora, and the tibiae and tarsi.

Head finely and sparsely punctate in males and rather coarsely and closely so in females ; pubescence grey, rather long and thin ; pronotum and elytra with rather coarse, close and impressed punctation and grey, rather long and dense pubescence in both sexes ; scutellum with sparse puncturation and a few grey hairs. Underside very coarsely punctate except the pro- and mesosternum, the median part of metasternum, the elytral epipleurae and

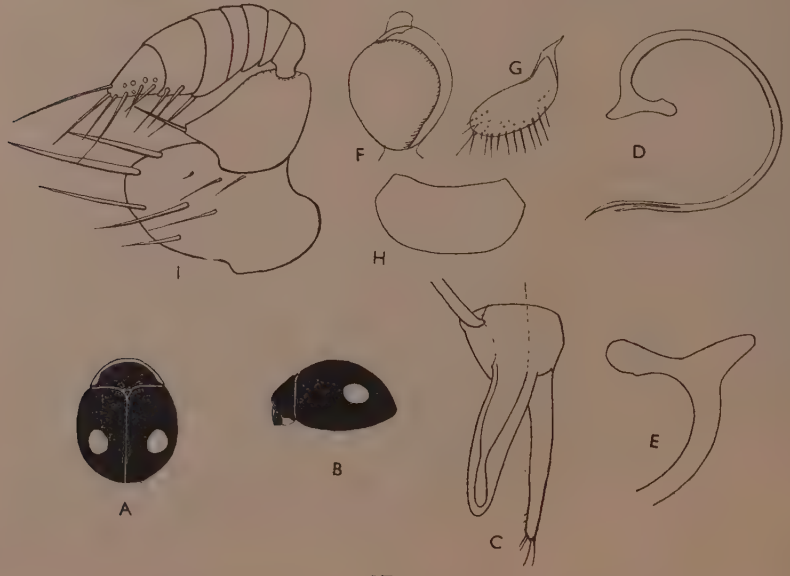

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FIG. 17.—*Acarinus philippinensis* sp. n. : A–B—Outline of body ; C—part of male genitalia ; D—sipho ; E—siphonal capsule ; F—spermatheca ; G—IX sternite ; H—X tergite ; I—antenna.

femora of the last two pairs of legs ; pubescence shorter than that on the upper surface, subdepressed and directed posteriorly. Male genitalia with the outer branch of sipho short and conical, inner long and rounded distally ; penis nearly four times as long as wide at the base, slightly narrowing anteriorly, with a rounded apex ; female genitalia as described for the genus.

Length : 2·0–2·25 mm. ; *width* : 1·5–1·8 mm.

Type : A male in the British Museum : The Philippine Islands, Mindanao (*Sempler*).

Paratypes : Eight, both sexes ; same data as the type except one from Bohol, The Philippine Islands (*Sempler*).

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Summary.

The tribe Aspidimerini Weise consists of certain predacious Coccinellidae which are widely distributed in the Oriental Region. Almost all the known species and their varieties are redescribed ; two new genera, *Pseudaspidimerus* and *Acarinus*, fourteen new species and eight new varieties are described. The material under study being extensive, many new localities are added and the geographical distribution of the genera and their subdivisions discussed. The Australian monotypic genera, *Cyrema* Blackburn and *Hypocyrema* Blackburn, hitherto included in this tribe, are transferred to Scymnini and Telsimiini respectively.

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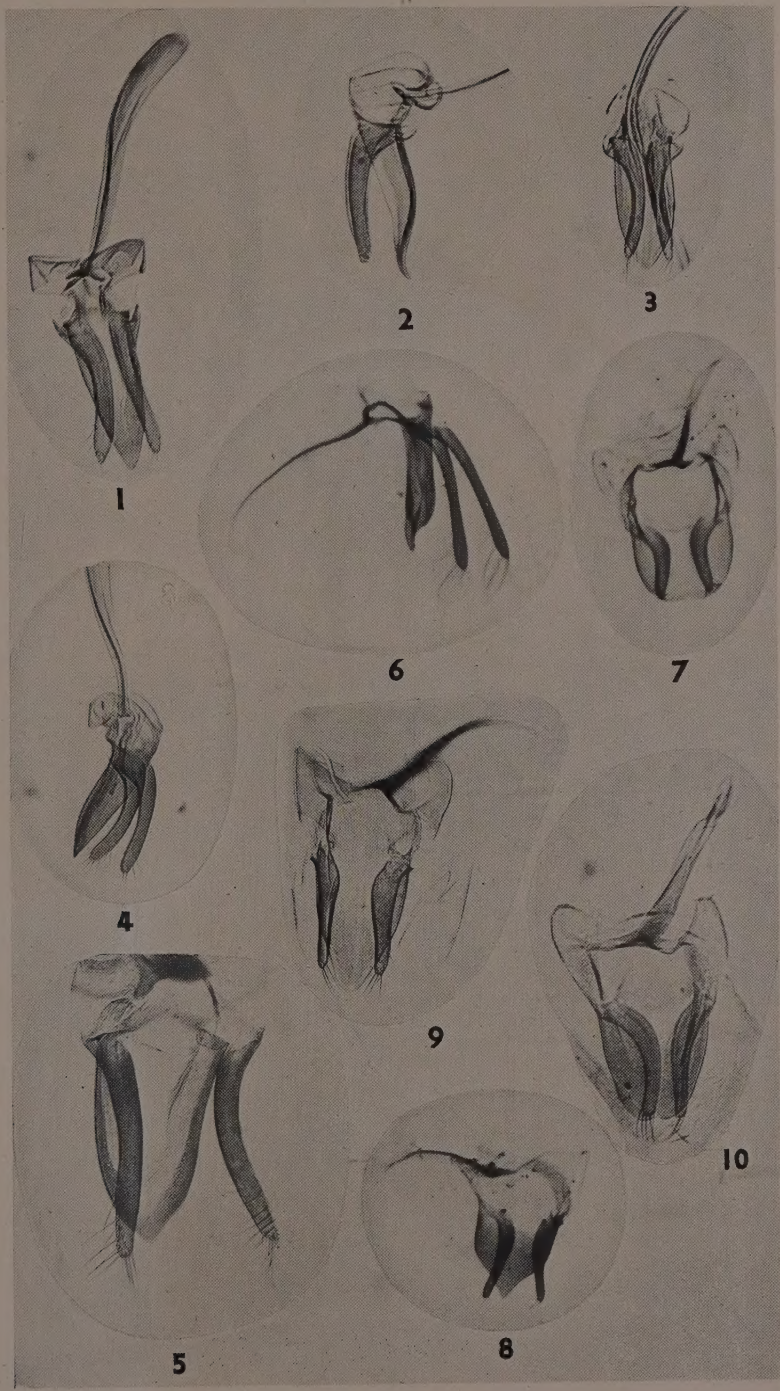
EXPLANATION OF PLATE I.

FIGS. 1–10.—Male genitalia of : (1) and (2), *Cryptogonus orbiculus* (Gyll.) (front and side views) ; (3) and (4), the same of *C. postmedialis* ; (5) *C. downingi* sp. n. ; (6) *C. deltodirus* sp. n. ; (7) *Pseudaspidimerus circumflexa* (Mots.) ; (8) *P. uttami* sp. n. ; (9) *P. flaviceps* sp. n. ; (10) *P. mauliki* sp. n.



KAPUR. Male genitalia of species of *Cryptogonus* and *Pseudaspidimerus*.